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PART 1

EVASION

EVASION

INTRODUCTION

1. This precis is designed as an aide to Evasion. It does not constitute rules. The necessity to evade in the present day could occur from:

   a. A breakout from PW Camp.

   b. A breakout from a surrounded position in small numbers or as an individual.

   c. As a result of tactical nuclear strikes and the eventual disorganisation of Corps and divisional boundaries.

MOVE BY DAY

2. Moves whether of individuals or groups must be planned in advance. Moving by day is inadvisable, but sometimes unavoidable i.e. after a PW breakout or when an extremely long distance must be covered. If this is the case:

   a. Put on a bold front, do not appear 'furtive', this arouses suspicion.

   b. Obtain unobtrusive clothing and assume a definite identity if possible, i.e. carry a spade etc.

   c. Keep clean (shave if possible).

   d. Make use of a bicycle and trains. The destination of train is often marked on the bottom left hand corner of trucks. Keep away from stations.

   e. Rivers are a possible means of escape, but avoid large ones as they will be watched.

   f. Beware of *children* and *dogs*.

MOVE BY NIGHT

3. 90% of evasive moves should be by night. But darkness often breeds over confidence. There will be a compromise between taking the easiest route and avoiding going where the enemy expect you. Study and memorise your route in order to avoid using light to map read.

4. Never move on roads. If crossing a road, locate sentries and if necessary use a diversion. (Cross immediately after a vehicle has passed, noise and light.)

5. Never cross bridges. Try improvising rafts in order to keep clothing dry, or *swim*.

6. In hills avoid using ridges as you are likely to be silhouetted and remember you can be seen from below for a greater distance than you can see. After crossing a skyline change direction on a downwards slope and look behind to see you are not being followed.

7. Keep away from population of any kind. ALWAYS have at least one emergency RV. Know how long it will be open. When you are making for RV after enemy contact, make sure you are not followed.

8. Use a leading scout as far forward as possible even when only two men are together.

9. Avoid walking in mud, through standing crops or any place where obvious tracks will be left. Leaving litter or any signs of occupation in a lying-up area is asking for trouble.

10. Danger Zones. The following points will help evasion in dangerous areas:

a. Cordons. These are relatively easy to pass at night. If you watch for up to 2 hours some enemy soldier will give away his position by noise, movement or normal sentry relief. Once a position is located pass as near to it as you safely can.

b. Cordons will nearly always be near roads because enemy transport can be quickly deployed off them. This will not however be the case if the enemy have available helicopters in quantity. If they are heard expect cordons to be in low ground or to use flares from high ground. Para 6 above becomes very important.

c. Cross roads immediately after vehicle using light which has passed. These will blind enemy sentries who seldom, if ever shut their eyes to the light.

d. Imitate silhouette of enemy sentries for so far as possible. In particular headgear. Learn at least one phrase in his language like "Don't shoot you bloody fool", but you must be able to say it fluently.

LYING UP POSITION (LUP)

11. Selection. Do not use isolated cover, particularly if it is marked on a map. A thick hedge or long grass if often better than small woods.

12. *Entry*

a. Whenever possible after dark.

b. Be careful not to leave tracks (see para 11(d)). If possible reorganise position at first light.

13. *Siting*

a. Concealed from ground and air.

b. If possible only one good approach.

c. Easy escape route.

d. Near water if you intend to stay more than one day. Otherwise take water in with you during the night.

e. A good location for an LUP would be long grass, vegetation or scrub in an isolated position.

14. *Procedure in LUP*

a. Keep quiet and still.

b. Have a sentry if in a group of more than two.

c. Bury all refuse.

d. Kit always packed and if in possession of weapons, clean one at a time.

e. Men always ready to move quickly i.e. compass, rations, map on body. Weapon at hand.

f. Emergency RV must be known and withdrawal route planned.

g. Before evacuating site search for any avoidable trace of occupation.

h. Smoking must be controlled i.e. smoke showing by day, cigarette end glowing by night.

PARTISANS OR AGENTS

15. There are basically two types of contacts an escapee can make:

a. An organised contact after a PW breakout, with prior knowledge of RVs.

b. A chance contact, not previously planned, with a reliable source i.e. a doctor or priest in an enemy occupied area.

16. The civilian agent if caught has more to lose than you so after making contact:

a. Make up your mind to trust or distrust him.

b. Ensure RVs are secure and that you have a drill at them i.e. one man entering before remainder when in a group.

c. Do all the agent says, but never say who previous contact was.

d. In the case of 16(b) ensure that he is alone before contacting.

e. Have an emergency RV in case something goes wrong.

17. It is the personal determination of the escapee which will ensure his success. Compliance with the above principles will only serve to make the task easier.

PART 2

SURVIVAL NAVIGATION

SURVIVAL NAVIGATION

INTRODUCTION

1. By Survival Navigation it is meant navigation without the normal aids such as a compass and map. It should be considered a bonus if, after the earliest stages of capture and searching, one is still left with these navigational aids.

2. This precis introduces the natural and regular functions that surround the world which, although used as the main method of navigation in the past, have been forgotten or the method of using them is simply not known.

3. The precis is divided into the following sections:

   a. The Sun.

   b. The Stars.

   c. The Moon.

   d. Plant Growth.

   e. The Home-Made Compass.

   f. Time and Distance.

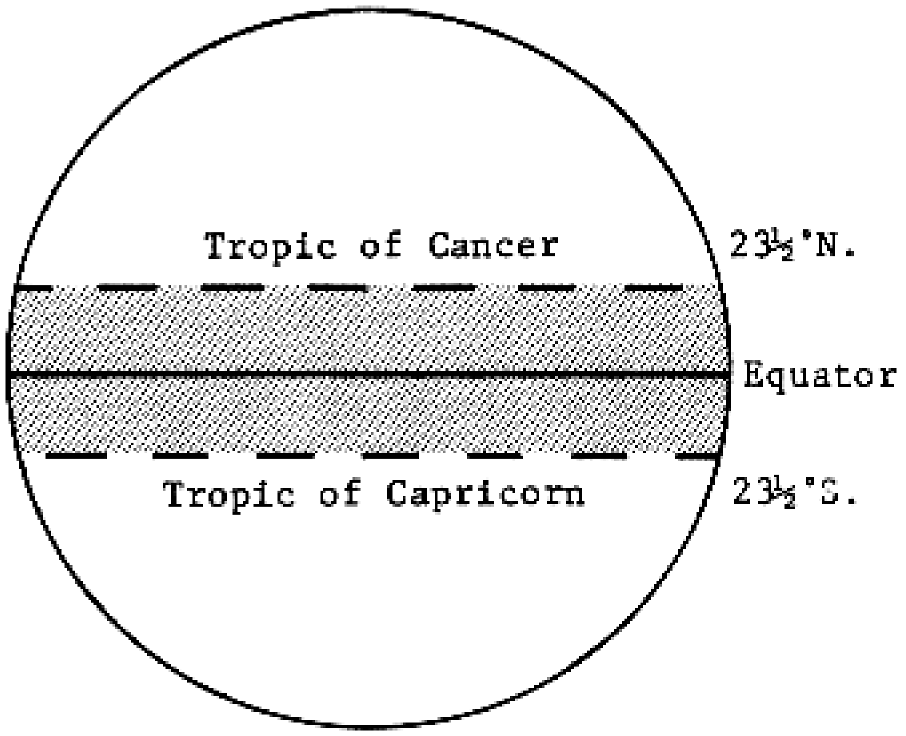
4. It is emphasised that reading this precis is insufficient and that only by regular observations whenever out of doors will accurate results be gained.

THE SUN

5. It is well known that the sun rises in the EAST, sets in the WEST and, anywhere in the Northern Hemisphere, is due SOUTH at mid-day (local time). If one is in the Southern Hemisphere it indicates NORTH.

   N.B. As a general rule this is alright but if working in the tropics take note of the sun's movement between Cancer and Capricorn (Fig 1). The sun is overhead Cancer on 22 June, overhead Capricorn 22 Dec, and overhead the Equator on 21 March and 21 September.

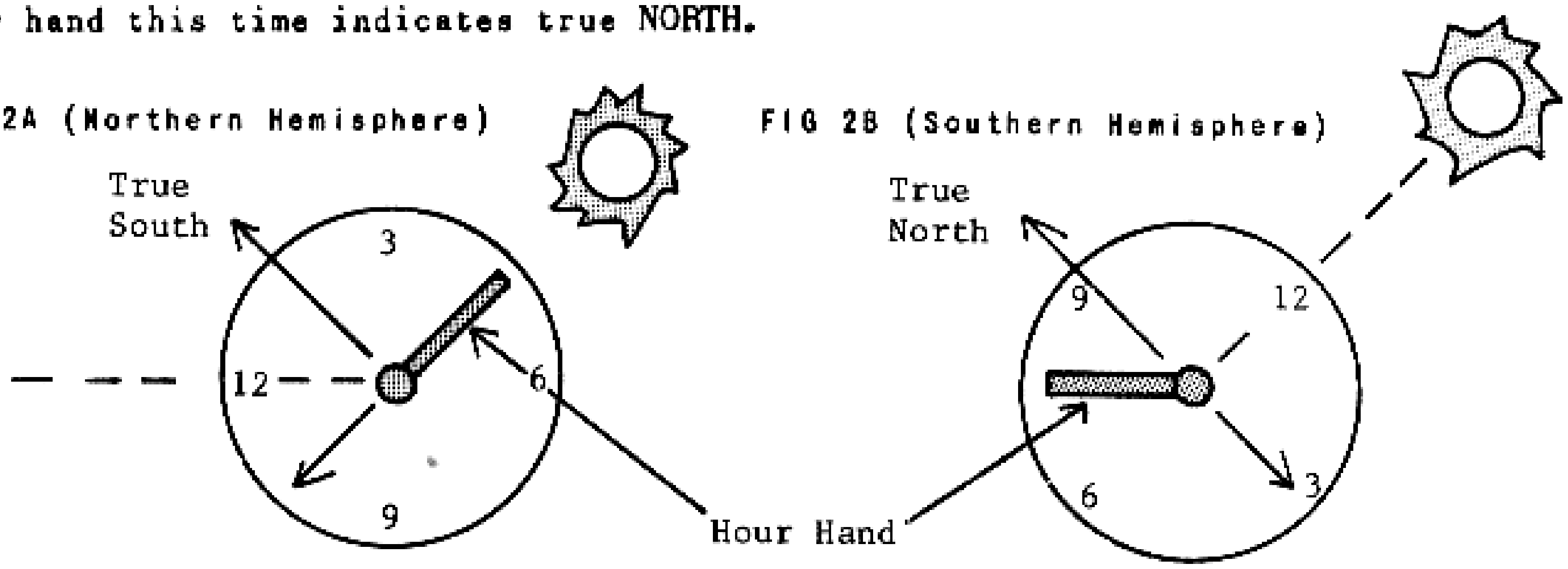
FIG 1



6. If there is doubt as to whether the sun is NORTH or SOUTH of you a five to ten minute study of the shadows will soon indicate which way the sun is moving.

7. NORTH and SOUTH using a watch: This is probably one of the best known methods but, except at mid-day (local time) when it is correct, it should be considered a rough guide only. The following method shows how it should be used. (N.B. Fig 2A and 2B) In the Northern Hemisphere the watch is held horizontally with the hour hand pointed at the sun. An imaginary line is drawn from the centre of the watch through the 12. True SOUTH is midway between the hour hand and the 12. In the Southern hemisphere the imaginary line through the 12 is pointed at the sun but the mid point between the 12 and hour hand this time indicates true NORTH.

FIG 2A (Northern Hemisphere) FIG 2B (Southern Hemisphere)



8. EAST/WEST line using the shadows. Place a stick about three feet tall into the ground. The ground should be *flat* and clear of growth (N.B. Fig 3). Mark the tip of the shadow with a peg or stone. Wait ten minutes and mark the tip of the shadow again. The straight line joining these two points indicates the E/W line. The EAST/WEST line is correct no matter what latitude or time of day this is done.

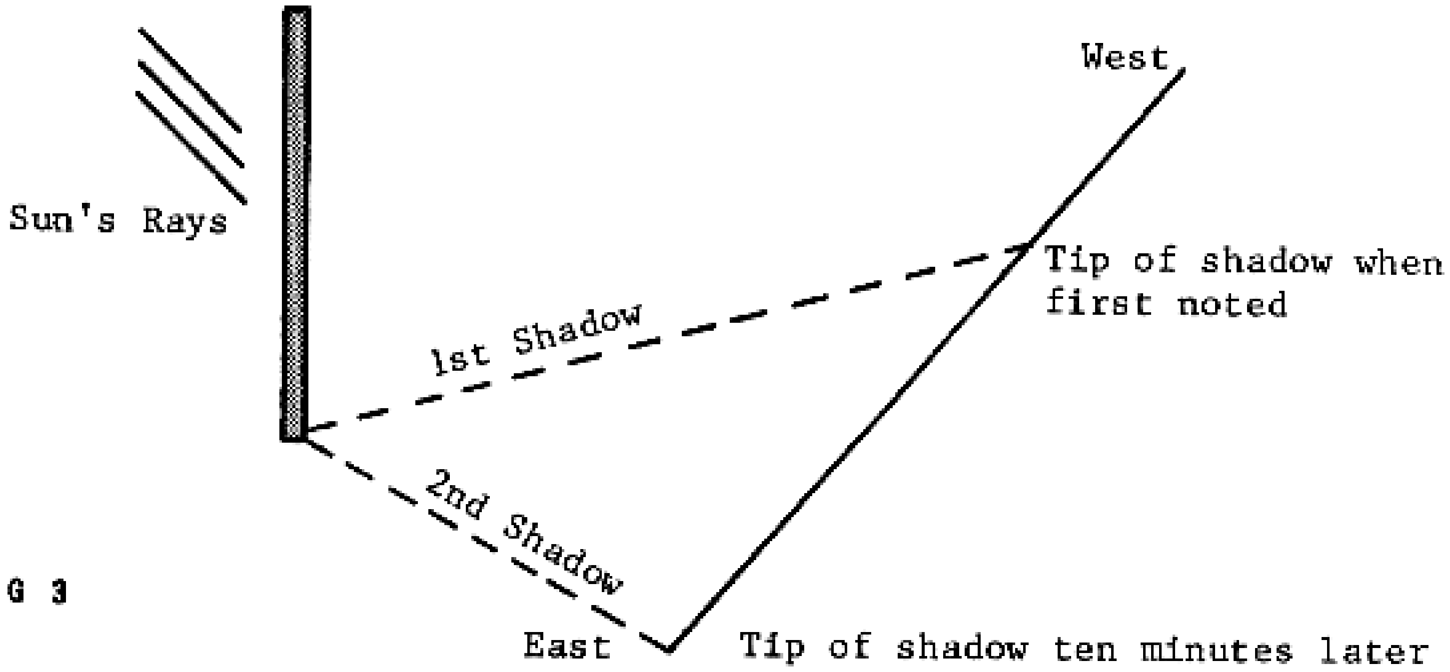
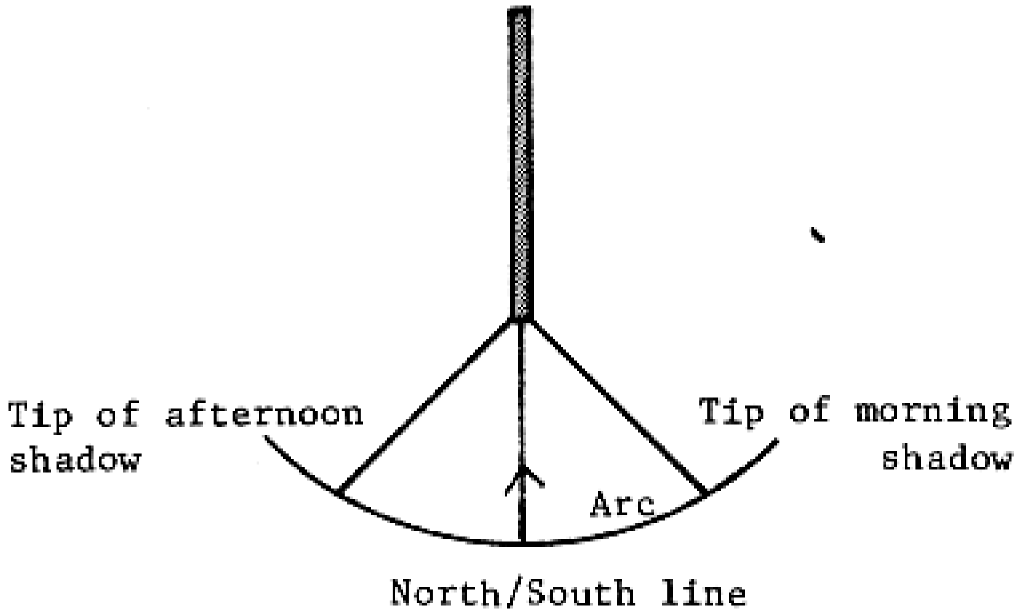


FIG 3

9. The NORTH/SOUTH line using the shadows at mid-day. Place a stick about two feet tall into the ground. The area should be *flat* and clear of growth. Before noon the shadow should be marked by a peg or stone. Using a piece of string draw an arc around the base of the stick the same radius as the shadow. When the shadow again touches the arc (afternoon) mark with a peg. Divide the angle formed by the base of the stick and the two pegs and this indicates SOUTH in the Northern Hemisphere and NORTH in the Southern Hemisphere (see Fig 4).

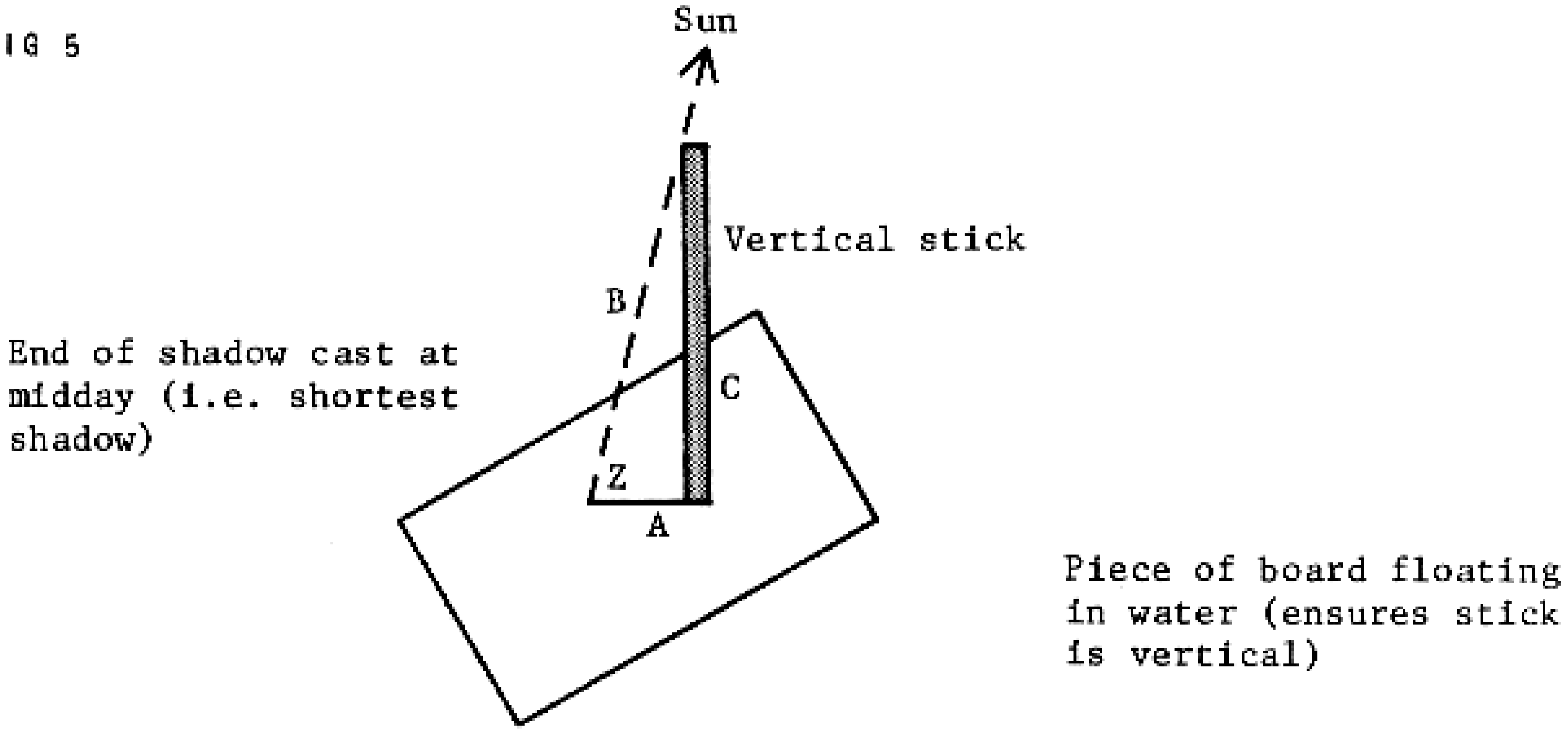
FIG 4



N.B. When the shadow is shortest it will also indicate the NORTH/SOUTH line.

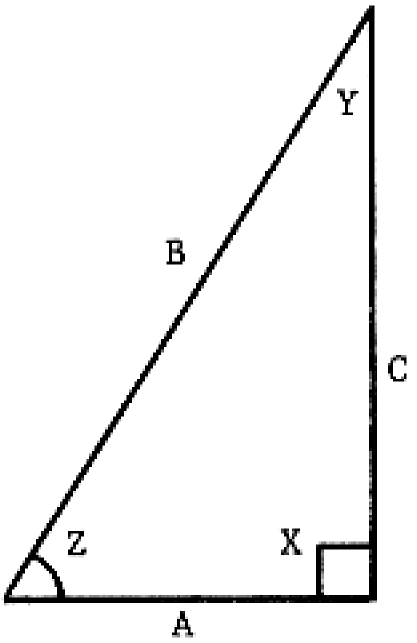
10. Because air travel is on the increase it may become useful to know your latitude. In para five the sun's regular movements between CANCER and CAPRICORN were mentioned. By knowing the date it is possible to calculate, very easily, the sun's latitude. To calculate one's own latitude without instruments or tables, scale drawings would have to be made in their stead (N.B. Fig 5, the sun moves its latitude 22.0123 minutes daily).

FIG 5



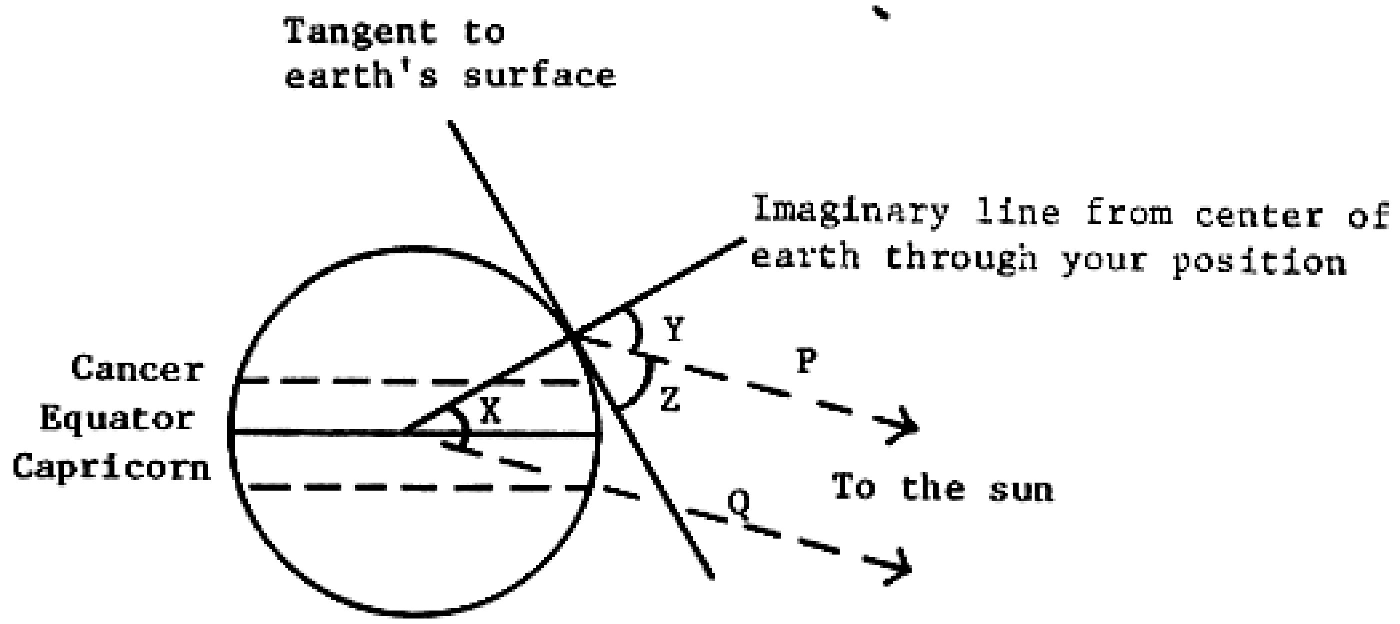
The diagram that should be put on paper (exactly to scale) should be the right angled triangle formed by the sides A, B and C and the angle Z (see Fig 6). Using a home-made protractor measure the angle Z.

FIG 6



11. Fig 7 shows the angle that the survivor needs to determine his latitude. By using basic geometric knowledge this can be achieved as follows:

FIG 7



A. The ∠ Z in Fig 7 is the same as that in Fig 6.

B. Angle Y + Angle Z is 90° so we can find out angle Y.

C. Because the lines P and Q going to the sun are assumed to be parrellel Angle Y = Angle X.

Latitude =

a. NORTH of the sun and sun NORTH of Equator.

90° - ∠ Z + sun's overhead latitude R = Latitude of observer.

b. NORTH of the sun and sun SOUTH of Equator.

90° - ∠ Z - sun's overhead latitude R = latitude of observer.

c. SOUTH of the sun and sun SOUTH of Equator.

90° - ∠ Z + sun's overhead latitude R = latitude of observer.

d. SOUTH of the sun and sun NORTH of Equator.

90° + ∠ Z - sun's overhead latitude R = latitude of observer.

N.B.

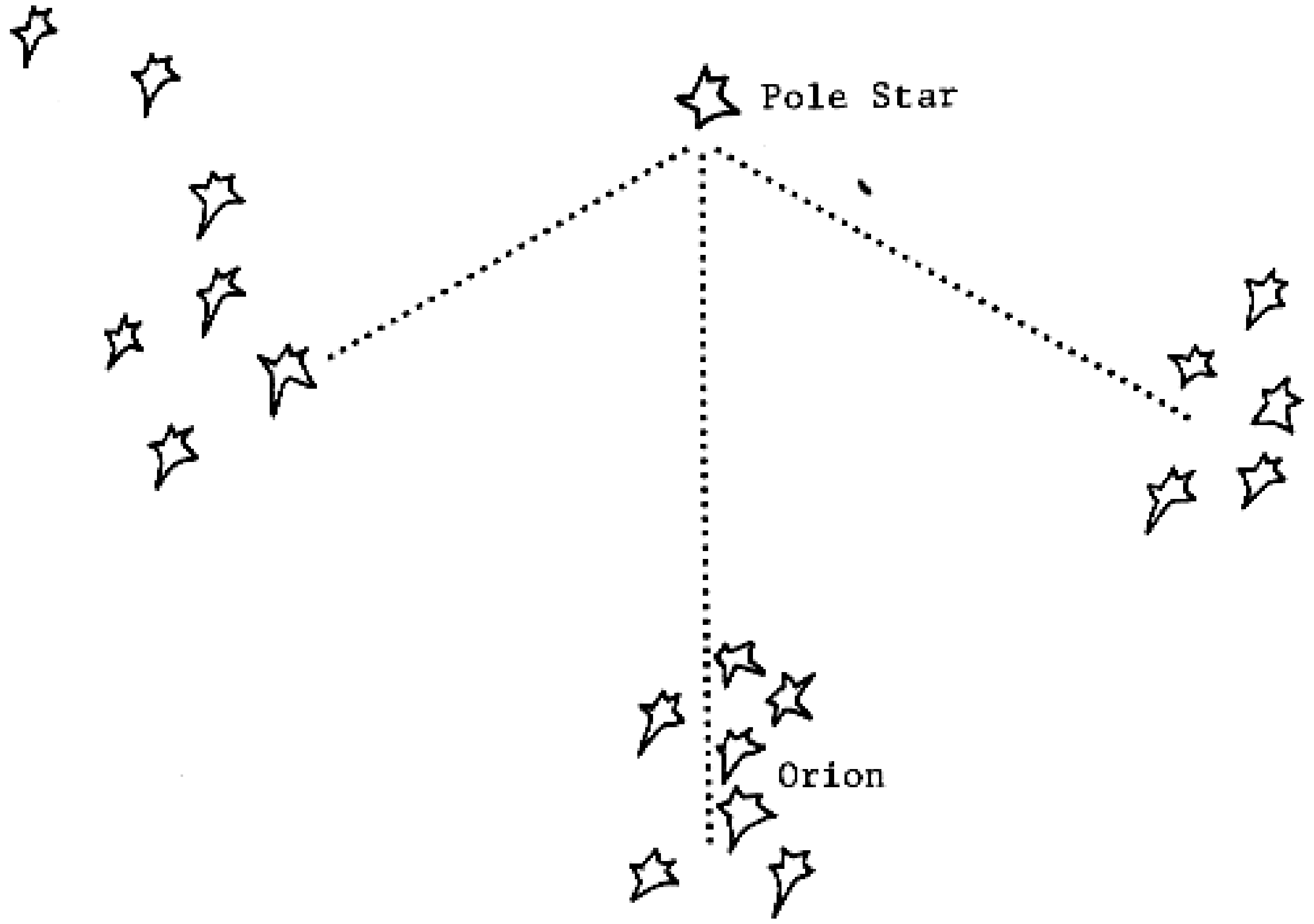
1. To obtain longtitude it is necessary to know Greenwich Mean Time. The sun moves 15° every hour.

2. It is emphasised that the observer's position gained by the method explained above (even with the utmost care) can only be taken as a rough guide.

THE STARS

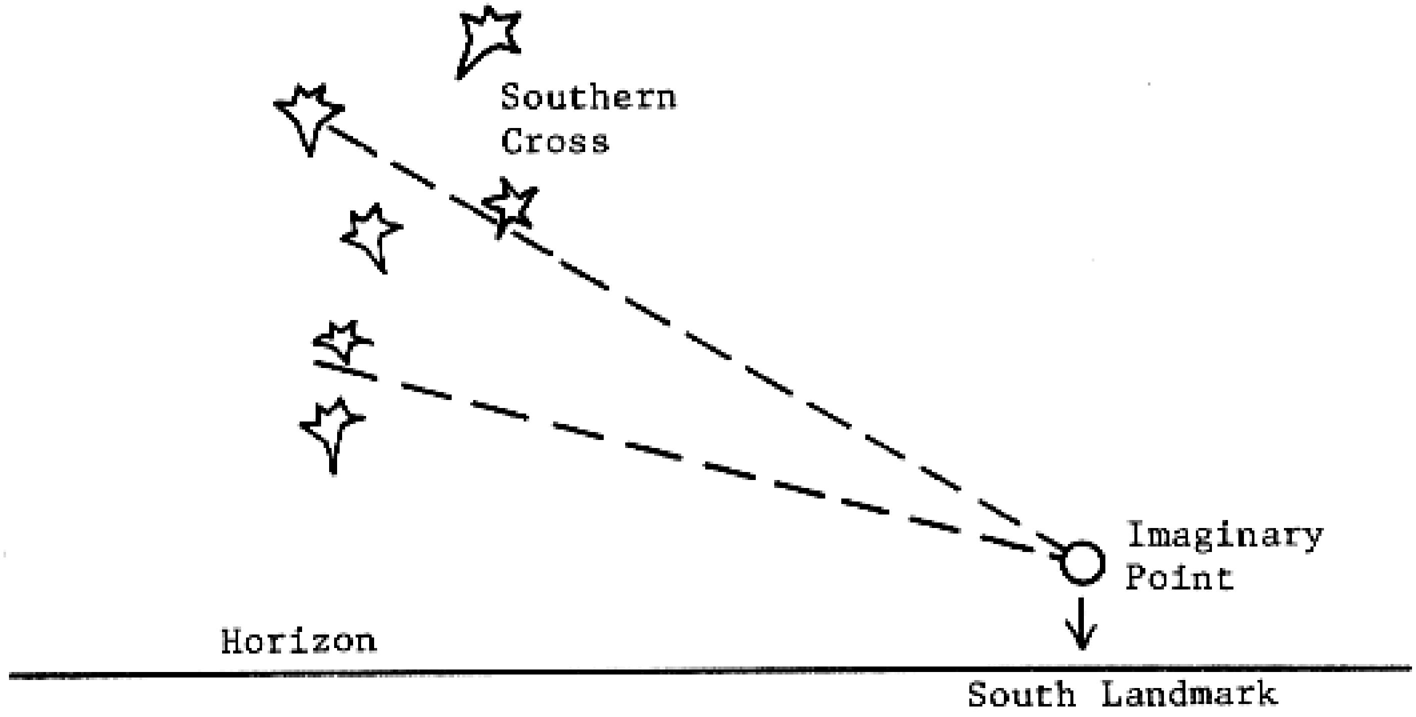
12. Northern Hemisphere: The North Star or Polaris can be taken as sufficiently accurate for anything the Survival Navigator may need. It in fact fluctuates about 2°. It can be found by three main methods - The Plough, Cassiopea and Orion (see Fig 8).

FIG 8



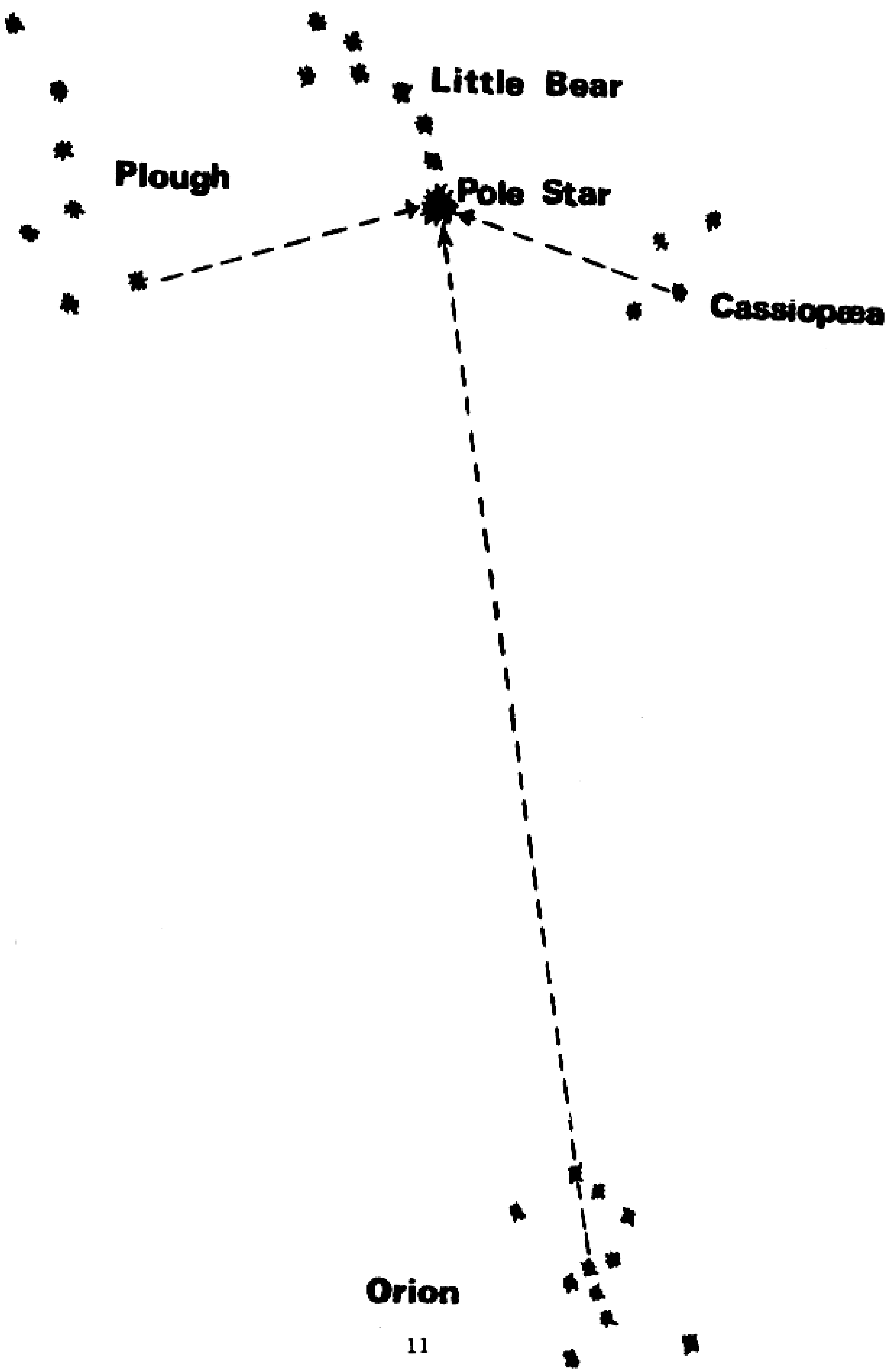
13. The Southern Hemisphere: The first method of finding the SOUTH point on the horizon is to multiply the longest axis of the SOUTHERN CROSS by 4½. This brings the observer to an imaginary point above the horizon. The SOUTH landmark is immediately below this point. In the second method of finding the imaginary point the two bright stars just to the EAST of the SOUTHERN CROSS may be used as shown in Fig 9.

FIG 9



14. Because of the way the earth is continually revolving stars seem to swing from EAST to WEST in great arcs. The way in which stars seem to move can provide a useful guide to direction. First, get two fixed points over which to watch (either the sights of a stationary rifle or two stakes driven into the ground for the purpose and their tops lined up carefully). If a star is watched in this manner for several minutes, it will be seen to rise, to move to one side or the other or to sink.

Three Ways of Locating the Pole Star



If the Star:

a. Appears to be RISING you are looking approximately EAST.

b. Appears to be FALLING you are looking approximately WEST.

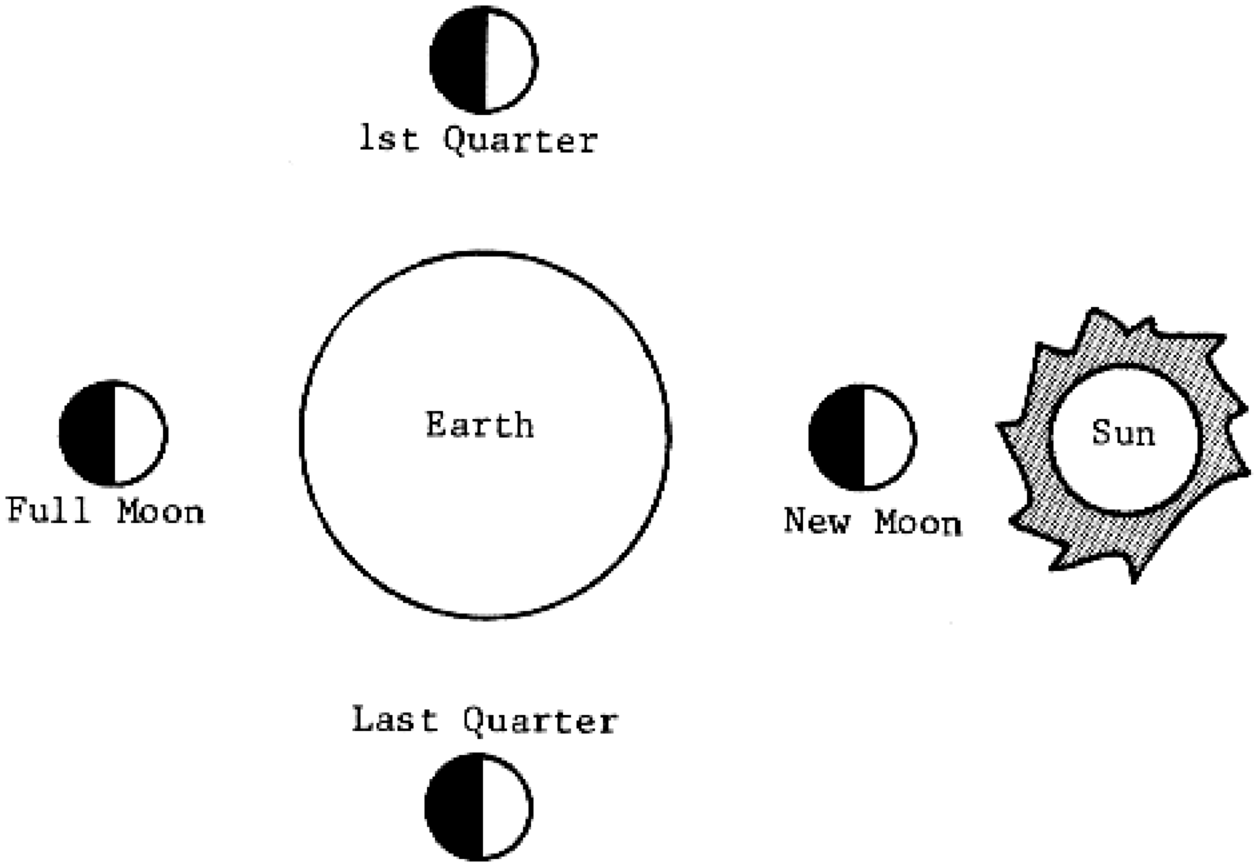
c. Appears to be LOOPING FLATLY TOWARDS THE RIGHT you are facing approximately SOUTH.

d. Appears to be LOOPING FLATLY TOWARDS THE LEFT you are facing approximately NORTH.

THE MOON

15. It is well known that the MOON changes shape and ranges from being a full circle, through all portions of a circle, to nothing at all. Fig 10 shows the reason for this. When the MOON is on the same side of the world as the SUN the shaded side is facing the EARTH. When the MOON is on the opposite side, the side illuminated by the SUN is visible from the EARTH as a complete circle. Viewed from the EARTH, the MOON looks like a semi-circle at the first and last quarters. This regular movement and appearance can be used as a guide by the navigator.

FIG 10



16. The illuminated side is always nearest the sun therefore:

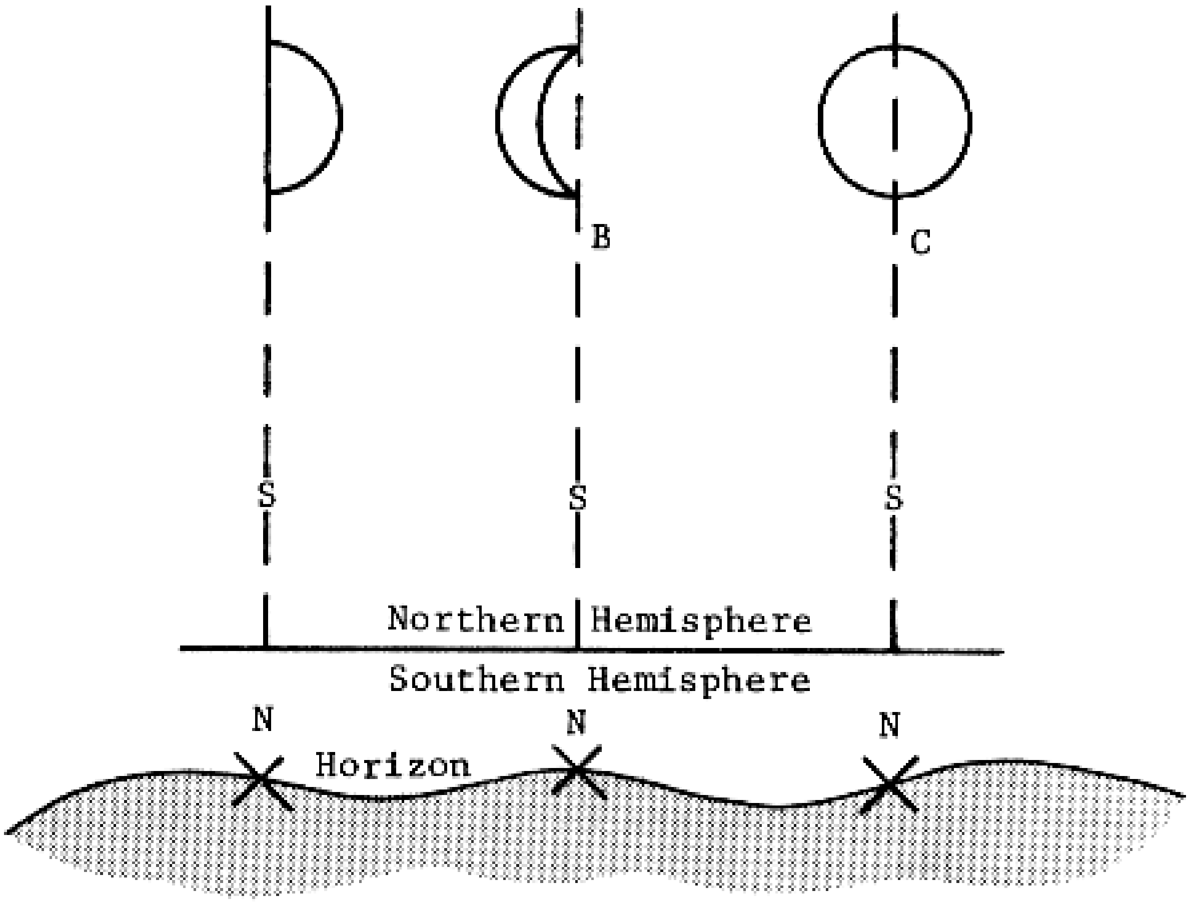
a. If the moon rises before the sun sets the illuminated side will be on the WEST.

b. If the moon rises some time after the sun sets the illuminated side will be on the EAST.

c. If the moon rises at the same time as the sun sets it will be a full moon and the method of using this is below.

17. (See Fig 11). The very approximate NORTH/SOUTH line can be seen by joining the horns of an incomplete moon. Fig 11 shows a variety of shapes the moon may be and the way in which the horns are used.

FIG 11



18. When the moon is a full circle or a half circle it is possible to tell the direction provided local time is known.

Local Time -	1800	2100	2359	0300	0600
First Quarter	S	SW	W	-	-
Full Moon	E	SE	S	SW	W
Last Quarter	-	-	E	SE	S

N.B. The directions should be taken as a guide only.

PLANT GROWTH

19. Both the wind and the sun affect the growth of plant life. The most casual observer has noticed windswept trees in exposed places and has realised that their appearance clearly shows dominant wind direction. The prevailing wind changes from place to place but in England it is SW and in NW Europe (the low countries) it is NW. The wind will also affect the growth of grass, ferns and so on but it is only with practice that the survival navigator can really make use of this. With grass tufts it is advisable to check with the hand to see which way the grass is tending to grow (see Fig 12).

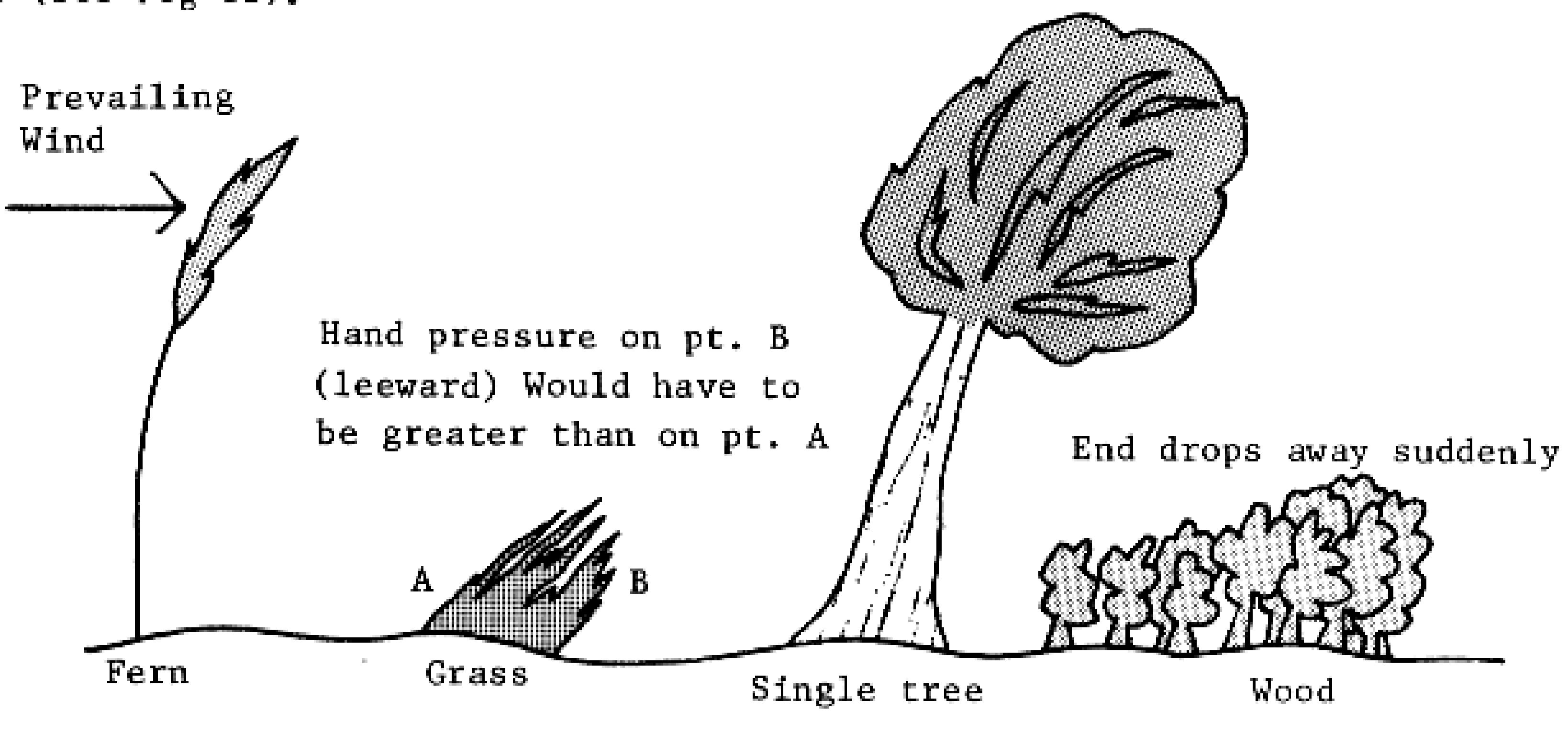
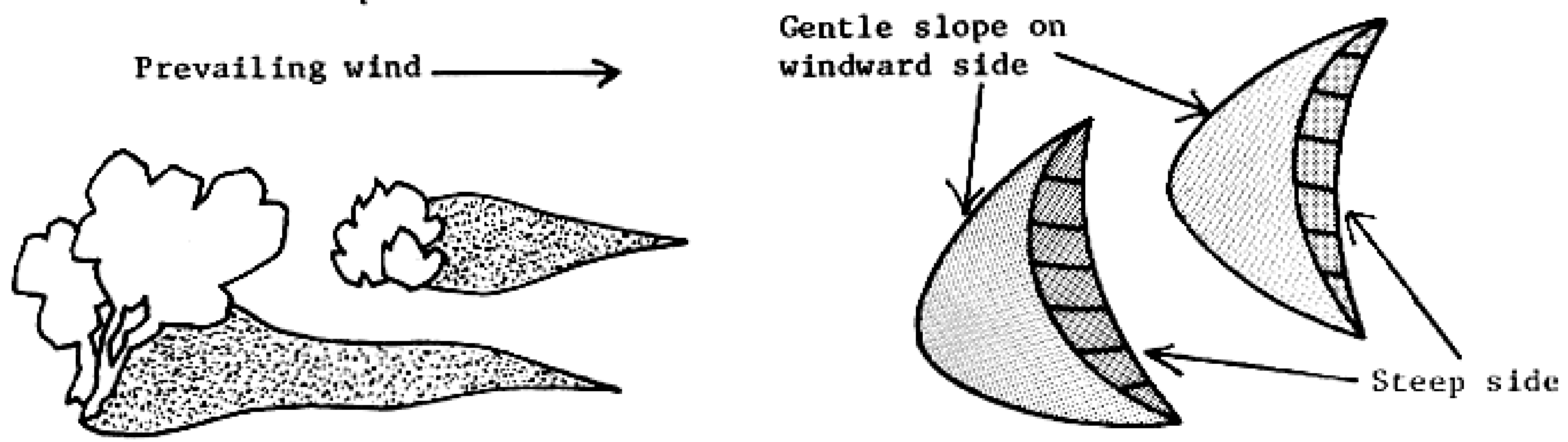


FIG 13 A. Sand tails formed behind small plants & bushes

B. Formation of sand dunes



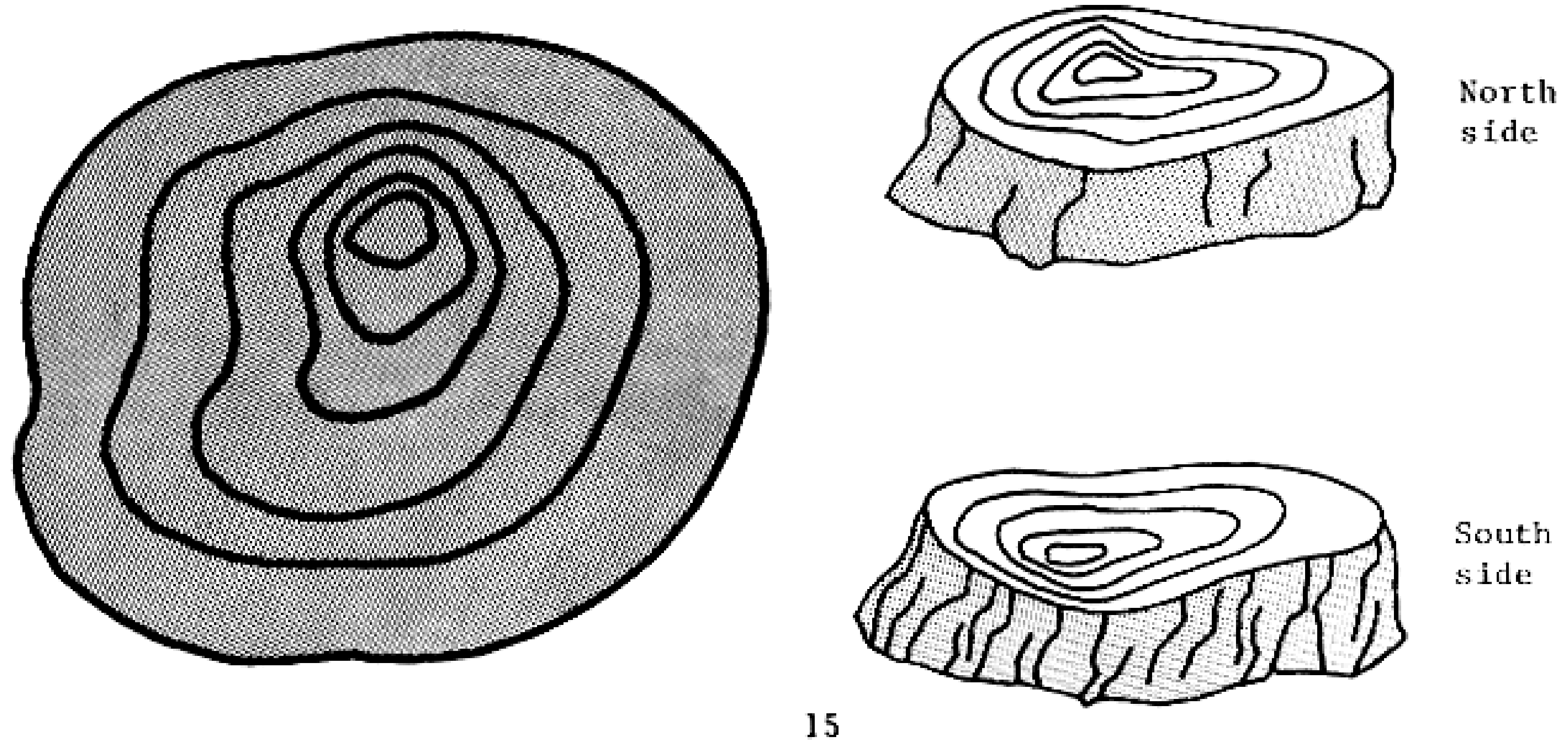
20. In the desert or dry, dusty areas it will be found that sand dunes and sand tails (Fig 13) will give an indication of the prevailing wind. They can easily be changed by a long hard wind from another direction so check the indicated direction if possible.

21. It is emphasised that to become good at telling direction from plant growth requires continuous practise. Never should the evidence of one plant or tree be taken. It is the general impression that the navigator must look for.

22. The sun also greatly affects plant growth but, whereas the indication from wind will be most noticeable in an exposed position and where wind direction is unlikely to be influenced by the shape of the ground (e.g. a valley), the sun's influence will be most noticeable in a sheltered spot which is not affected by local shade. Flowers tend to grow towards the sun (i.e. SOUTH in the Northern Hemisphere) and the foliage of trees will be most abundant on the sunniest side.

23. In the Northern Hemisphere, if the rings of a tree are examined (Fig 14), it will be found that the rings are closest together on the SOUTH SIDE, the sunniest side. Stretch marks in the bark are also most noticeable on the sunniest side. Moss is an unrealiable guide although it is commonly thought to grow mainly on the dampest side of a tree.

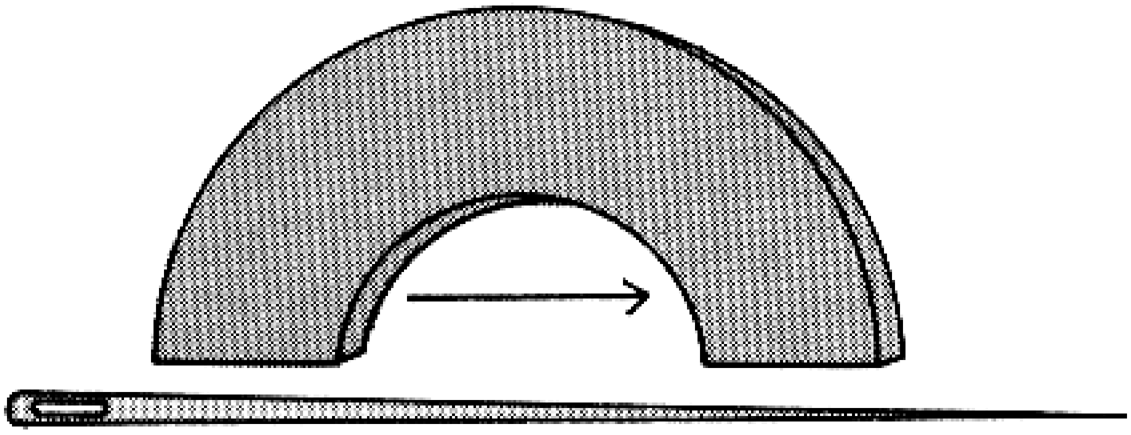
FIG 14



24. The home-made compass consists of a magnetised points - a needle, nail, pin, razor blade or similar piece of metal - and something by which to suspend the pointer.

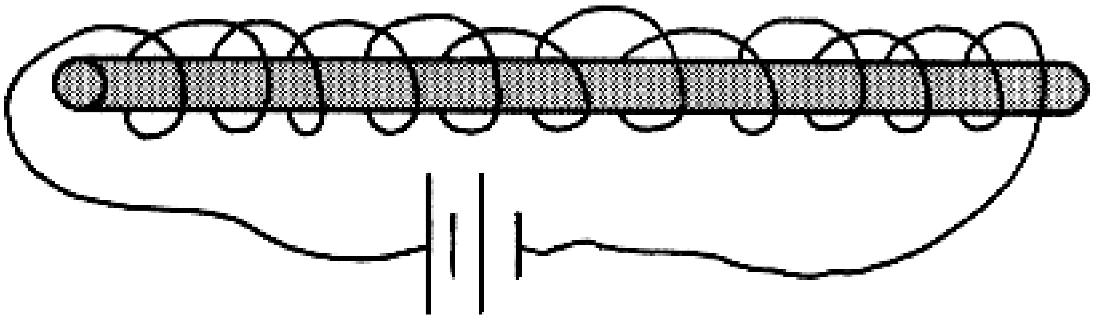
25. The points can be magnetised by being stroked with a magnet or piece of silk. It is adviseable to 'top up' these magnetised properties every few hours. If the stroking is towards the point, the point of the needle would indicate NORTH.

FIG 15



26. A piece of metal can be magnetised by coiling a piece of *insulated* wire (copper preferably) and then attaching each end to the terminals of a battery (see Fig 16).

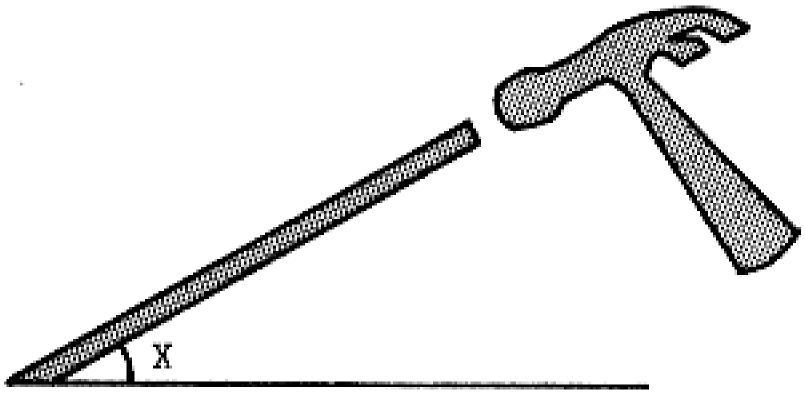
FIG 16



N.B. The wire must be insulated from the bar to be magnetised by either paper or thin cardboard, or the wire itself could be insulated. The voltage to magnetise a needle could be as little as 2 volts.

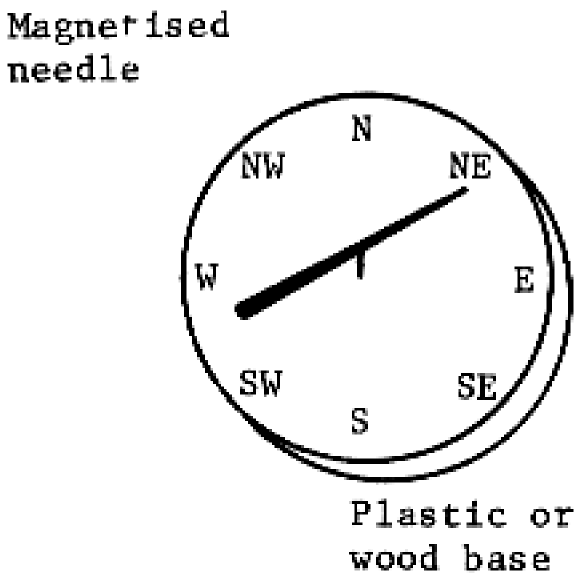
27. It is also possible to magnetise metal by tapping it sharply with a hammer (see Fig 17). The metal bar or nail must be aligned with the earth's magnetic field, i.e. pointing magnetic NORTH/magnetic SOUTH and the raised end should be pointing magnetic SOUTH when in the Northern Hemisphere and magnetic NORTH when in the Southern Hemisphere. Unfortunately the angle X varies. In England it is 68° and varies between 62° and 80° throughout Europe. The angle X should be as accurate as possible when the bar is struck but it would probably be magnetised if as much as 10° either side. Because of this the Survival Navigator will probably be able to make his magnet by trial and error. The angle X is the angle at which the magnetic field enters the earth's surface.

FIG 17



28. The magnetised pointer can be suspended in water (using grass, bark, or paper as a float) or it could be dangled on a piece of cotton (NOT very accurate). If time is available a home-made base and pivot could be made similar to Fig 18.

FIG 18



TIME AND DISTANCE

29. It is vital that, not only direction is known to the Survival Navigator, but also the distance he travels. Variations of ground, weather conditions and load carried are going to affect speed of movement. The following table gives a guide but it is as well for each individual to find his own capabilities under the various conditions. Carrying equipment and moving across country the following distances would probably be covered.

a.	NIGHT CLOUD	NO MOON	CLOSE COUNTRY (UK)	1000 metres
b.	NIGHT CLOUD	NO MOON	OPEN COUNTRY (NW EUROPE)	2000 metres
c.	NIGHT CLOUD	FULL MOON	CLOSE COUNTRY (UK)	2000 metres
d.	DAY MIST/NIGHT/CLEAR		HILLY COUNTRY	2500 metres

CONCLUSIONS

30. This precis has attempted to introduce a variety of methods of determining direction. Particular note should be made of those methods which are accurate and those which are only guides.

31. Wherever possible the Survival Navigator should check one method off against the other and in the case of plant growth the evidence of *one* plant or tree should never be taken - always a selection (the more the better).

32. Practice at natural navigation is essential to becoming really good. However, even the complete beginner need never be lost provided he knows and understands the basic facts.

33. The Indians of NORTH AMERICA used all possible indications in the forest. A missionary, Pere Joseph Francois Lafitan wrote in 1724:

> "The savages pay great heed to their star compass in the woods and vast prairies of the continent, as well as the rivers whose courses are well known to them. But when the star or sun is not visible they have a compass in the trees of the forest.
>
> The bark is dull and dark on the NORTH side. If they wish to be sure they give the tree a few cuts with an axe, the tree rings are thicker on the NORTH side and thin on the SOUTH side."

PART 3

IMPROVISATION AND ESCAPE KIT

IMPROVISATION AND ESCAPE KIT

INTRODUCTION

1. This precis may give the students some ideas on the improvising of equipment for use in escaping capture and surviving in the field. Inprovisation is obviously a case of personal initiative and largely dependent on time. The ideas put forward in this paper are to stimulate thought on the subject.

CLOTHING

2. This is particularly important in cold climates and when long distances are involved. The clothing used in PW camps will invariably be of a set pattern, which would immediately identify the escapees and also is likely to be insufficient to withstand the elements in a cold climate. Below are listed some ideas:

a. Skins. If time permits trap local animals, dry skins over fire and sew into jacket.

b. Para. A very adequate set of clothing can be obtained by cutting up para silk. In cold climates several layers will be required.

c. Sacking. By cutting holes in the top of a sack a jacket can very quickly be made. Hessian would also serve the same purpose.

d. Footwear. This is perhaps the most important as it suffers the most. Old rubber tyres are useful for the bottoms and a rope used in sandal fashion would be sufficient. Layers of canvas cut from a tarpaulin could also be used.

e. Canvas. From an old tarpaulin or webbing from a para harness one could make a pack, pouches or a belt.

f. Para. A very good hammock or sleeping bag can be made from the panels of a para.

EQUIPMENT

3. It is always surprising to find how dependant one is on eating utensils, mess tins or any of the usual equipment. Below are listed some ideas on the improvisation:

a. Needles. A comparatively easy thing to improvise e.g. nails, fine needles, old wire or possibly a piece of hard wood sharpened to a point.

b. Eating utensils. It is possible to make a very adequate mess tin and mug out of old tins. Also a cooker from an old tin can and a spoon can quite easily be carved from a hard piece of wood.

c. Wood cutting instrument. By using the new system a tenon saw and a drill can be manufactured. An old kitchen knife makes quite a reasonable saw with teeth filed in it. An axe is rather more difficult, but possible if a suitable flint can be found and lashed to a strong stake.

d. Hunting. Traps and snares are relatively easily made, but their siting is a matter of experience. Spears (prehistoric) and bows and arrows can be very successful. The thread out of para cord will make quite a reasonable fishing line.

FIRE LIGHTING

4. This is a much talked about subject. However even the experts are singularly unsuccessful. A notable professor has only achieved fire from natural resources twice. The following implements could be used:

a. Tinder, dry rotten wood - dry rags, bracken.

b. Magnifying glass. Lens of binoculars are quite good.

c. Flint and steel.

Hard wood rotated on soft - this is extremely difficult and takes a very long time.

ESCAPE KIT

5. This is equipment carried on the person and is particularly applicable to men working behind enemy lines. It must be very well hidden. Escape kit hidden in the clothing will probably be only of use to the escapee on immediate capture, when he still retains his own clothing. To stand any chance of retaining kit for the PW Camp it must be hidden in the natural crevices of the body e.g. mouth etc. The items of kit can be broken down under two headings:

a. Kit to help escapes.

b. Kit for use in navigation etc., having once escaped.

6. Below are listed a few suggested items of escape kit:

a. Compass.

b. Saw knife or thin cord saw.

c. Escape map.

d. Matches in wax.

e. Pack of cards (with map in between layers).

f. Para cord, string or gut (bootlaces).

g. Watch.

7. Below are listed some places where kit could be hidden other than on the naked body:

a. Seams and linings of clothing.

b. In the fake heel of a boot.

c. Threaded through the draw cord of a jacket.

d. False pockets.

8. All the items above will assist in the success of an escapee, they will depend for their remaining undiscovered on their originality and therefore, as with the improvised equipment, on the initiative of the man himself.

PART 4

CONTACTING AGENTS AND USE OF ESCAPE LINES

CONTACTING AGENT AND USE OF ESCAPE LINES

INTRODUCTION

1. While it is the responsibility of an evader to help himself, he may obtain some assistance from the Resistance Movements. If he is not given an RV to meet an agent he will have to make contact himself. It is important that it be realised that when a man is in an escape line the lives of many other people hang on his conduct. This precis lists some of the points for the evader to bear in mind.

CONTACTING AN AGENT

2. There are two ways of making contact with an agent.

a. Chance Contact. This will come about by you being passed on to an agent by a friend of his or by your own initiative. You may contact a lone worker or shepherd who will pass you on to an agent. The important thing to remember is that you must NOT approach the house of an individual, whose help you require, by day. Also if you contact him in the open it is vital that no one else sees you near him.

b. Pre arranged RV. When contacting an agent at a pre-arranged RV the following drill should be used:

(1) Before Contact

Arrive near the RV by night before contact is to be made. Spend the next day in a lie up position near the RV and keep it under scrutiny to ensure that it is not ambushed. Having decided the RV appears safe *one* man should move closer as the dusk falls to ensure that the enemy do not place an ambush with the dusk. The RV still appearing safe this one man makes a wide circle of the RV and finally closes in on it in ever decreasing circles. This will enable all likely ambush positions to be cleared before arrival at the RV.

(2) On Contact

Having arrived at the RV and met the agent, identity should be established. The agent is likely to ask you some detail about life in England so as to confirm your identity. Unless there is a pre-arranged password the decision as to whether to trust the agent must be made on the spot by the evader.

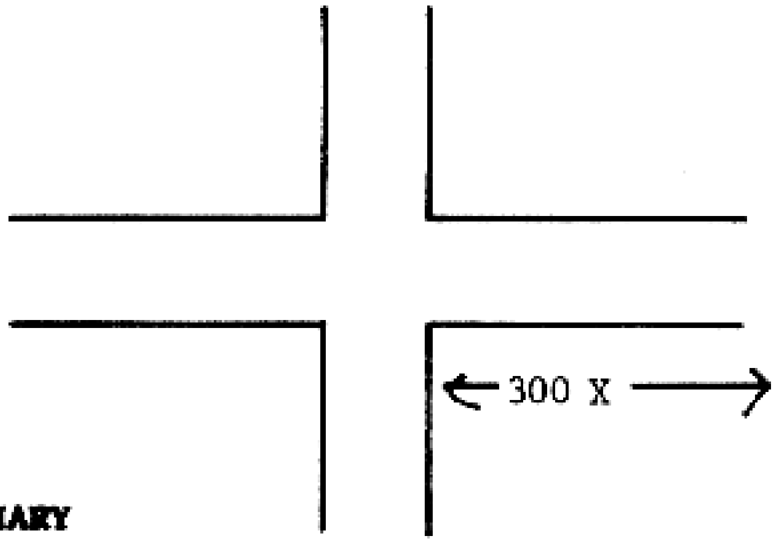
(3) After Contact

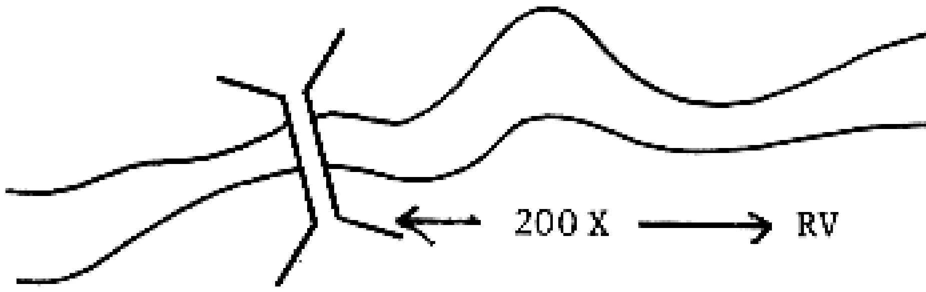
Having decided to trust the agent it is vital that the evader(s) should do exactly as he asks. Remember he knows the country, the people, the enemy locations and all other local knowledge. On NO account however should the agent be given any military information. Indeed if he persists in asking military information he should be regarded with suspicion. If at any time you decide that you cannot trust your agent, a clean break must be made at the earliest opportunity after your decision.

RVs

3. a. RVs should normally be sited on a Road Line, River Line, coast line, tree line etc. This will enable an evader who perhaps has inadequate navigation equipment to hit the line well to one side of the RV and then walk up the line until he hits the RV.

b. RVs should be near (a few hundred yards) but NOT on prominent points.





SUMMARY

4. Finally a few tips on contacting people in occupied territory.

a. Never make contact by day unless unavoidable.

b. Remember there may be a curfew at night.

c. If you contact a person by day ensure no one else sees you do it, and do not expect the person to attend to you until after dark.

d. The Local Doctor and Priest in friendly areas are useful initial contacts.

e. Remember strangers always arouse suspicion and will be talked about if seen.

f. Be patient and remember if caught you merely go back to prison. If an agent is caught he and his family may be tortured and executed.

ESCAPE LINES

5. You will be passed into an escape line or 'Rat' line by an agent or by the friend of an agent. A good Rat line is a highly organised piece of machinery with financial backing and with many people running a considerable risk. These people will be doing the job for patriotic or political reasons and will expect no payment other than the explicit obedience of the evader. Indeed once you are in an Escape line you will merely become a parcel to be passed from safe house to safe house.

RAT LINE DRILL

6. Once you are fortunate enough to have got into a Rat line there are several things to be considered.

a. Trust. Here again the decision lies with the individual as to whether he will trust the Escape line.

b. Boredom. Many people will be using the same line and it will only be capable of handling so many per week. Therefore it is likely that there will be long delays when the evader is confined to a barn or building. Further delays may be caused by part of the line being 'bubbled'. All this may add up to a wait of months. It is here that an individual's self discipline and will power will be tested to the limit. It is vital that the prisoner/evader goes out for exercise by day. Also there will be a considerable temptation to leave the Rat line and make your own way. This is a prize example of 'more haste less speed' as the chances of recapture are increased one hundred fold.

c. Physical Fitness. In World War II evaders covered hundreds of miles in a Rat line only to be left on the mountain side near the Spanish border as they were too unfit to complete the climb. An evader must keep fit from the start, in the PW camp when lying up and in Safe houses. It is possible to do PT in a very confined space if it is necessary.

d. Emergency Exit. Immediately an Evader is lodged in a safe house he must recce and lay on an emergency exit which is quite separate to the normal exit to the building.

e. Guides. When under charge of a guide his orders must be followed implicitly. Normally you should never talk to him or appear to know him when other people are present.

f. Security. On NO account should any written account or marked map be kept of your journey. If captured this could bubble the whole line to the enemy. Likewise don't ask agents any unnecessary questions. If you are recaptured 'don't know, can't tell' is the safest means of resisting interrogation.

GENERAL HINTS

7. a. Beware of fellow travellers and strangers, make use of gimmicks to avoid your falling into conversation i.e. Deaf and Dumb, reading a paper, locking yourself in the train lavatory, sleeping.

b. Don't whistle or hum tunes from your parent country.

c. Don't use or display any public articles of British Manufacture.

d. Study the customs of the country. If people belch loudly and wipe their mouths on the table cloth after a meal then do likewise. Watch how they leave the knife and fork on the plate etc.

INTELLIGENCE AND SABOTAGE

8. It is not an evader's job to collect intelligence but provided it does not jeopardise his main aim and providing he writes nothing down he should take note of anything that may be of use when he finally arrives home. Sabotage is a skilled and unusually highly organised past time requiring careful planning and some materials. An evader does not have the equipment to carry out sabotage and even if he does do some minor sabotage he is likely to frustrate the local effort by alerting the enemy.

CLOTHING

9. Providing the evader keeps some item of military uniform and does not deny he is a military person, if he is recaptured he stands a very good chance of being treated as a PW.

CONCLUSIONS

10. The advice in this precis is based on common sense. The successful evader must be determined, and of the right attitude of mind if he is to succeed and his aim must be to return home to fight again.

SUCCESSFUL EVASION IS ACHIEVED BY DETERMINATION

PART 5

DOG EVASION

DOG EVASION

INTRODUCTION

It is difficult to produce information regarding dog evasion without using technical jargon and masses of statistics. Psychologically such verbage helps boost the morale of the writer but does little to help the reader, and in particular, the student of evasion. These notes are therefore prepared to help the non-technical and are written accordingly:

Man has used the dog for military purposes for thousands of years. The Egyptians, Huns, Romans, all resorted to the use of Guard and Tracker dogs and no doubt the evasion tactics employed then have changed very little.
Henry VIII provided Spain with large attack dogs, wearing spiked collars, to fight the French.

The availability of chemical aids is limited. With the current trend of interest shown by many Governments, some progress will be made in this field, but as in all research, finance, and more pressing needs must take precedence.

It is also possible to produce chemical aids for the handler and his dog to overcome evasive aids. The result could be the evasive aid becoming a beacon for the dog to home on.

These very general notes are therefore written for the guidance of personnel who find it necessary to evade working dogs and in so doing have no chemical aids available.

If you are supplied with such chemical or mechanical aids, use them as an addition to your evasion technique and not as a replacement.

The dog used for Military purposes must conform to certain requirements, irrespective of its breed. These can be summed up as follows:-

Physical	Height in shoulder 22 to 26 inches Weight varying from 45 lbs to 100 lbs plus Speed in excess of 25 miles per hour
Temperament	Intelligent, Courageous, Faithful, Adaptable, Energetic.

There are many breeds having these requirements, such as Alsation, Dobermann, Pinscher, Rottweiler, Mastiff, Boxer, Collie, Groenendael, Schnauzer (Giant), Labrador etc.

The breed of dog employed at a particular base may be varied to suit the climatic conditions under which it will work. Humidity and temperature being the main factors involved.

SIGHT

The dog relies very little on sight during its day to day activities. It's attention is, however, drawn by movement and if it's interest is roused, will follow up with hearing and nose.

Dogs have nonochrome vision, with a limited depth of field. There appear to be areas at certain distances where focus varies. As in humans, vision varies from dog to dog, as does the inclination to use sight.

At night the dog is able to detect movement, due mainly to its low position looking up at the skyline. It makes more use of what light is available.

SOUND

With a range of hearing twice that of humans, the dog is attracted by noise not received by the handler. Beware of equipment rubbing together, radio equipment, burners, etc. The distance at which received is very much affected by weather, in particular wind and rain. Obey the rules of approach from down wind.

Dogs used for military purposes are divided into two basic groups. Those which rely on scent carried in the air and those who rely on scent held on the ground.

The very basic division is applicable mainly to training and there is no doubt that an experienced dog in either field will naturally progress from one scent source to another when the need and the interest is great enough.

However, the division into these two groups is sufficient for evasion purposes. Many rules apply to both. Bear in mind that there can be great variations in requirement from types of dogs for instance - using air scent e.g. Guard, Defence and Search. The same will apply to those using ground scent.

SCENT

The dog's sense of smell is many thousands greater than our own. Through it's olfactory organs it has the ability to detect a source of scent, either by following air currents, or tracks left on the ground. This natural ability to hunt has been controlled by man, and the search and tracker dogs have emerged. These dogs must have the physical capability of following such tracks for many miles.

Human scent from a dog's point of view is a combination of smells from many sources.

BODY SCENT

The smell of the human body, made up of 'body odour' produced in abundance by the sweat glands, in particular under the arms, legs, etc. This particular odour is increased by rapid movement, nervousness tension, various types of food and uncleanliness.

To this odour, we must add the following:

Clothing, deodorants, toiletry, shoe leather, polish, chemical aids if used on clothing, environment (Petrol, oil, timber, etc.), and many other that the human may have been in contact with.

Race and creed play a part in the individual definition of a particular scent.

The amount of total body scent, produced is greatly affected by constitution, activity and mental state.

It therefore follows, that in many respects you can control your flow of body scent. Keep cool, calm and more with confidence.

GROUND SCENT

Body scent deposited by the soles of the feet, plus body scent drifting down, but mainly ground disturbance caused by the weight of the man on the ground.

This contact of the foot produces scent from the following sources. Crushed vegetation, insects, deposits from shoes. The breaking of the surface allowing gas and moisture to escape. All these scents added together produce the main scent for the tracking dog.

Airborne scent is soon dispersed leaving the dog with the ground scent only. An experienced tracking dog can follow this scent up to forty eight hours afterwards, in virgin, humid territory.

The trained tracker dog can find the direction of the track. This is possible because of the purchase of the foot. The toe part of the impression is deeper, and remains in contact longer. After examination of several foot contacts the dog can follow the track in the correct direction.

Because of the natural evaporation taking place on the surface, with variation in moisture and gas movement, the basic content of each track varies from minute to minute. This variation together with the deposited body scent makes every track different. It is this variation and the ability of the dog to compute through its olfactory system the basis of each track, that the dog can follow an individual scent, even when many other tracks are present.

THE TRACKING DOG

The following will give an evader sufficient detail to make a good attempt at tracker dog evasion. As no two dogs react in the same way to a given set of circumstances, we can only generalise. It is for this reason that the notes are in three groups.

1. Before contact with enemy

2. Contact from a distance

3. Close contact

These headings are for convenience only, and any of the acts given can be applied to each quite successfully.

1. ***Before any contact is made with the Enemy***

a. Associate oneself as much as possible with the surroundings. The rules of physical camouflage should also apply to personal scent. Keep in with the surroundings. Alien scents attrack the dog.

b. Travel over ground already used by humans or animals.

c. When travelling in groups split up every now and then. This need be for only a short distance, but will be sufficient to slow the dog down.

d. When preparing food, take care as to direction of smoke and fumes. Handle wrapper and containers as little as possible. When burying, do not handle the ground, use metal instrument. If possible, sink in deep water.

e. When entering or leaving L.U.P's, do so from different directions. Make false trails round perimeter of L.U.P.

f. Follow to the side of animal tracks, thereby leaving no footprints.

2. *Contact from a distance* Visual contact or dog locating track

a. Speed and distance. Tire the dog, destroy handler's confidence.

b. If in group, arrange R.V. Split up.

c. Vary surface and terrain. Where possible use metalled surfaces, cross and re-cross at intervals.

d. Pass through fields which contain, or have contained, animals.

e. When travelling through woods, scrub or brush, change direction frequently. Remember dog will usually be on a line. This becomes easily tangled, and will slow or stop dog for a time.

f. If possible cross streams etc. Walk along streams for short distance and make false exit and entry points. Walking too far in water will slow own progress too much.

g. Take any step which slow dog without further endangering self e.g. false trails, use of roads, entry into villages.

3. *Close contact* - Dog in position to be released and able to attack.

a. Get out of sight of handler

b. Change direction

c. Use metalled, stone, rough surfaces

d. Pass through animals

e. Clear obstacles

f. Shed articles of clothing food etc., any scientific aids

g. Wherever possible try to part handler from dog.

h. If dog catches up with patrol - silent destruction, using tactics as for guard dog.

There are many factors which affect scent, and a dogs scenting capabilities. These factors can best be summarised as follows:-

Favourable - Moist ground conditions
Vegetation, grass fern, etc.
Hummidity
Forest areas
Light rain, mist, fog
Slow moving quarry
Quarry carrying heavy burden
Nervous quarry - excess perspiration
A number of persons on the move
Light winds
Still, sturgid water, i.e. swamp

Unfavourable - Arrid
No vegetation
Metalled surfaces, sand, stone
Animal scents, tracks
Motor, factory, pollution
Dust, etc. irritating to dogs nose
Quarry continually taking evasive steps resulting in handler losing confidence in dog.
Ploughed ground
Gale Force winds
Ice, snow, water

THE GUARD DOG

The larger breeds of dog are used for this purpose. The final objective being to chase and attack. It must have the courage, and physical capability to fulfil the objective. It is useful to note that various methods of training are employed throughout the world, varying from compulsion to revulsion. Irrespective of training design, the end product is basic - Attack and Detain.

The guard dog is operated in two ways; with a handler on leash or roaming free in a compound. Whichever method is employed, the dog will rely primarily on its hearing and scenting ability to detect intruders. It's sight, being less developed, will be used as an auxilliary detection, the dog being drawn to a particular area by movement.

After detecting an intruder, the dog will operate on command of the handler or on situation stimulas. The handler command is normal, but the situation stimulas is where a dog is released into a compound and will attack any person entering, other than a known guard or collection vehicle. Some dogs are so trained that any person is attacked, it being necessary to collect directly into a cage within the compound. Here the basic command to attack is the physical presence of a human being.

In either case the dog will retain its grip on its quarry until ordered to leave. In the case of highly aggressive dogs, strict compulsion may be necessary.

It is this courage and ability of the dog that makes it vulnerable to the intruder. Pad oneself as described below, encourage the dog to attack, biting in a place that you dictate. Present a target to the dog, thereby placing it in a position in which it can be immobilised or destroyed.

Adequate protection can be had from wrapping round the arm any of the following, webbing belt, leggings, rifle sling, ponchos, wrapping from equipment, scarves, headgear. Always have a layer of softer material inside and outside your main protection. The inner layer to take some of the pressure, the outer to give the dog something to grip on.

The dog is far less dangerous if it makes firm contact on the first run in. If it falls off or is deterred, it will look for an alternative target and then begin to dictate the situation to you.

Throughout its training the dog has always been allowed to succeed. It is this inbuilt confidence in its own ability that encourages the dog to overcome every obstacle. Give it the opportunity to succeed and then destroy. It is most vulnerable when gripping target.

Remember a dog deterred will bark or growl, drawing the attention of the guards.

To avoid initial detection, obey the following simple rules:-

1. Always approach from down wind.

2. As silently as possible.

3. Ensure you cover the last part of the journey as slowly as possible thereby cutting down excretion of body odour.

4. Keep all garments securely fastened. Where a draw cord is fitted, keep it tied.

5. If you have to stop for any reason before entering the perimeter do so outside the 200 meter mark. Within this distance dogs have detected intruders travelling against the wind as well as with the air flow.

6. Keep as low as possible, use natural hollows. The air scent will be obstructed by undergrowth or barriers.

7. Be aware of changes in scent direction caused by barriers, i.e. around buildings.

8. Approach from an area where you know other humans operate in, or approach from. The dog pays less attention to areas where it expects there to be persons or vehicles. It may be attracted, but under some circumstances, this identification will be misinterpreted by the handler.

9. When within the perimeter fence, remember, the dog relies mainly on sound and scent. Its attention will be drawn by movement. If you are down wind and the dog is passing, keep still. Guards have passed within 10 yards without being attracted.

10. The average guard dog will have difficulty in detecting persons up high. If they do, they have difficulty in pinpointing location. This delay will give you time to operate.

DESTRUCTION

The destruction of a trained dog is by no means a simple matter. The situation is made more difficult for the evader, by the necessity for silence, or at least a degree of quiet.

It is often easier to take the dog and immobilise, by either tying to a secure fitting, or binding the front legs. Always muzzle, and if possible render it inopperable, example, breaking a leg.

Actual destruction may be by any of the following:-

1. Stab through abdomen, aiming from rear to front.

2. Sticking pointed stick, spear into abdomen

3. Severe blow to skull

4. Shooting through skull, aiming above, and in centre of line drawn diagonally from ear to eye.

5. Shooting through back

6. Chop at back of neck just before shoulders

Whichever method is decided upon, supreme physical effort must be exerted. The dogs skeletal system is such that it is virtually armour plated. Go for the soft spots, the abdomen, or the point beneath the chin, and above the breast bone.

THE SEARCH DOG

This dog, trained to quarter an area, with minimum command. On location of an intruder, to give tongue, or return and collect handler and patrol.

Relies mainly on locating source of air borne scent. Make sure that you keep that source as small as possible.

When in an L.U.P. observe the following:-

1. Keep as close to the ground as possible.

2. Have the majority of clothing over you, let the earth absorb the scent.

3. Breath down into the ground, or at least into low vegetation.

4. Keep still.

5. If burying items, do so underneath your lying point, all smells kept down by body and covering.

6. Restrict smoking, fires, etc. Dogs whilst searching are drawn by any alien scent.

7. This type of dog is more inclined to circle and bark, or collect handler. Depart when possible and use normal evasion techniques.

8. In all circumstances if located, and escape not possible, catch and destroy.

Remember always, that the dog, be it guard, search or tracking, is reliant on command from a handler. These commands may be by voice, whistle or hand signal. They may not be continuous, or obvious, but are always necessary. It is this reliance of the dog on the human that makes an opening for the evader. Part them, and the dog begins to lose confidence. Change the dog's surrounding and immediately its sense of security is weakened.

Always aim to:-

a. *Destroy* the confidence of the handler in his dog.

b. The confidence of the dog in the handler.

c. Confidence in themselves.

CONCLUSION

There are many and varied opinions regarding evasion. This state of uncertainty is due mainly to the very limited amount of proven information we have of the dogs interpretation of scent, and it's ability to distinguish between scents.

As humans we tend to base all theories on our own standards, thus expecting the dog to live up to our requirements.

The dog does not have the capability to penetrate the human mind, although there may be a transference of feeling. We, on the other hand, can study the psychological qualities of the dog, and understand him. In so doing, discover his weaknesses, and his vulnerable points.

PART 6

WILD FOODS

WILD FOOD

"Thou shalt regard Nature as thy friend, drawing thy wants from its bountiful store". SIXTH Commandment for Survivors in the NZ bush.

INTRODUCTION

1. The Joint Service Directive on Combat Survival states that training should be given on the techniques of escape and evasion. If a soldier is to escape successfully he will almost certainly need food. He may not have the opportunity to obtain it, or to save it up before escape. To steal food from farms, or houses will, in many countries, be impossible and it is, in any case, risking detection and recapture. Therefore soldiers should know how to identify anything that is edible.

WILD PLANTS

2. In less prosperous countries, peasant folk are able to find many things growing wild that we in the British Isles with our supermarkets, good roads and railways have long ago forgotten about. Famine, poverty and pioneering taught men in the past that there is an abundance of food provided by nature, only we must know what to look for. This precis sets out some edible wild plants and other things that are common in Britain. It should be noted that this wild food will also be found in many of the temporate regions of the world, other than Britain. For instance, many of them will be found in parts of Europe, N Africa, Central Asia, Eastern Asia, New Zealand and N America. The lists should therefore be useful for Combat Survival training and exercises. It is hoped to be able to provide an illustrated handbook on this subject by the end of 1967, which will give more detail than the lists and which will provide a coloured picture.

FUNGI

3. We in Britain are not a fungi eating nation. Mushrooms are eaten, but most of them have been cultivated and are as a result of poor nutritional value. On the continent and elsewhere in the world, particularly in the East, a great variety of fungi are collected and sold in markets. Abroad some are nowadays tinned, or else dried and packaged for sale. It is often suggested that fungi have little, or no food value. This is not in fact true and to show their true value the following extract from "Britain's Wild Larder, Fungi" by Claire Lowenfeld, herself a qualified dietician is quoted:

NUTRITIONAL VALUE OF FUNGI

Proteins, Fats and Carbohydrates. With regard to their chemical composition and their nutritional value, fungi are usually compared to vegetables, but in fact they occupy a position between meat and vegetables. They contain more protein than vegetables - though only part of the protein is digestible and they contain a little more fat, except in the case of Mushrooms which are lowest in fat. The composition of Boleti, Mushroom, Milk Caps and Chanterelles compared to various types of meat and to six of the most popular vegetables, make the proportion quite clear (see Table 1 attached). A table is quoted from a Swiss book, to demonstrate this point, as very little work seems to have been done on wild fungi in this country or in America. Food values of Mushrooms can be found in many books, but the mushroom is not really typical, as it contains less protein and carbohydrates than *Boletus edulis*, and less fat than all three wild fungi mentioned in this table.

Calories. The quantity of calories supplied by 1kg (2.2 lb) of *Boletus edulis*, Milk Caps, Chanterelles and cultivated Mushrooms is very similar to that supplied by the same quantities of vegetables. Again Boleti supply more calories than the other fungi or other vegetables (see table 2 attached). The calories or fuel value of Boleti can be best compared to the fuel value of carrots.

Minerals. The mineral value of fungi is also near to the mineral value of vegetables. Mushrooms have more phosphorus than carrots, cabbage, cauliflower, spinach; they are rather poor in calcium. This can be seen from the comparison of the mineral elements of Mushrooms with the vegetables mentioned above (see table 3).

Vitamins. There is some vitamin content in fungi, but down on vitamins in wild fungi. Traces of vitamin are found in quite an appreciable quantity in Chanterelle. Large quantities of vitamin are found in most fungi, but only traces of Vitamin C. According to work done at the Towell Institute, Aberdeen, mushrooms contain 50 international 100 gr. Vitamin B and 1.9 mgm. Vitamin C per 100 gr. The most interesting fact, however, is that fungi contain Vitamin D, the important anti-rickets vitamin, which cannot be found in vegetables but only in fish oils, for instance halibut or cod liver oil.

Boletus edulis	contain 83 Int Un Vit D per 100 gr
Chanterelles	contain 83 " " " " " " "
Mushrooms grown in the light	contain 63 " " " " " " "
Mushrooms grown in the dark	contain 21 " " " " " " "
Gyromitre esculenta or Helvella crispa	contain 125 " " " " " " "

"Unquote"

5. Shown in the lists of edible fungi are the good, or excellent mushrooms for eating that are common in Britain and which are of course found in many other parts of the world.

6. There are many popular beliefs about ways of identifying poisonous fungi. It is agreed opinion of all authorities on this subject to-day that THERE ARE NO RELIABLE HARD AND FAST RULES TO GO BY. There is a popular belief that if an onion, some garlic, a silver spoon or a sixpence are cooked with fungi, they will change colour if poisonous fungi are present; however, when cooked with Amanita Phalloides (the most deadly of all poisonous fungi) they all remain unchanged. Therefore the beginner should:

a. Learn to recognise a small number of the important edible fungi and forget and not touch any of those which are not in this small range.

b. Never pick any fungus which has got white gills.

c. Learn the characteristic formation of the Amanita family. Almost all fatalities from fungus eating have occurred from eating members of this family (see diagram attached).

7. To an escaper, fungi are an invaluable source of food. This the German Army discovered when on the run in East Africa during the First World War when they lived off fungi. More recently there have been examples of Gurkhas finding fungi in Borneo and Malaya of similar type to those that they

eat in Nepal. Even in Arabia fungi have provided sustenance as witnessed by Wilfred Thesiger after he had crossed the Empty Quarter:

"The evening before we reached Buraina I was lying contentedly on the ground watching bin Kabina roasting some toadstools that he had found while herding the camels. There were also truffles here which were even better".
(Extract from Arabian Sands)

SEAWEED

8. Escapers may find themselves along a coastline; they might in fact make for one to obtain a boat to make good their escape. They should therefore know that no seaweed is poisonous and that some found between the high tide mark and the low tide mark are edible and nutritious. It is rich in minerals and in Vitamin C. Care should be taken when collecting it that only fresh plants are selected as it spoils quickly when left exposed out of the water for any length of time.

9. Small quantities of seaweed are in fact contained in ice-cream, jelly, blancmanges, Australian tinned meats, tinned beer and some soups. Porphyra is sold as laverbread in many markets all over South Wales and it can even be purchased in Hereford. In Ireland, Carageheen, or "Irish Moss" is collected and sold for consumption and in Scotland, Dulse is sold in Aberdeen and other markets again for UK consumption. In Canada Dulse is sold in place of tobacco as a "Chew" and during the Italian Campaign, some KIWIS chewed it to relieve their thirst.

TREES, BARKS AND NUTS

10. Although the outer bark of trees should never be eaten owing to the large amounts of tannin present, the inner bark next to the wood of any tree may be eaten raw, or cooked. The inner bark of PINE trees is highly nutritious and contains large quantities of Vitamin C. The inner bark of BEECH trees is also nutritious, particularly in Spring when it is newly formed.

11. Apart from the common Sweet Chestnut, Hazel and Walnuts, the Acorn and the Beechnut can be used to provide nourishment for an escaper. Then again, the leaves of some trees are edible and others can be used to make tea. For details see list 4.

CONCLUSION

12. Plant foods have one great advantage over animal foods, namely availability. The area in which the escaper may have to survive in, may be deficient of wild life, or he may be injured, or exhausted and incapable of making the sustained efforts required to capture animal foods. There are however, very few places where an escaper who has taken the trouble to study this facinating subject, has not benefitted.

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TABLE 1

Chemical Composition of Fungi compared with the Chemical Composition of meat and vegetables.

	Water %	Protein %	Fat %	Carbo Hyd %	Raw Fibre %	Ash %	Vit A %	Vit B %	Vit C %
Beef (Medium)	72	21	5.5	0.5	0	1	*	*	
Veal (Fat)	72	19	7.5	0.1	0	1.4	*	*	
Pork	47.5	14.5	37.25	0	0	0.75	*	*	
Kidneys	75.5	18.5	4.5	0.4	0	1.1	**	**	
Liver	71.5	20	3.5	3.5	0	1.5	***	***	
Cod	81.5	17	0.25	0	0	1.25	**	**	
Boletus edulis	87.13	5.39	0.40	5.12	1.01	0.45	**	*	
Mushrooms	89.70	4.88	0.20	3.57	0.82	0.82	**	*	
Lactarius	88.77	3.08	0.76	3.09	3.62	0.67	**	*	
Chanterelle	91.42	2.64	0.43	3.81	0.96	0.74	**	*	
Carrots	86.77	1.18	0.29	9.06	1.67	1.03	**	**	**
White Cabbage	92.11	1.52	0.15	4.17	1.17	0.88	***	***	***
Red Cabbage	91.61	1.67	0.15	4.78	1.05	0.72	**	***	***
Cauliflower	90.89	2.48	0.34	4.55	0.91	0.83	*	**	*
Spinich	93.34	2.28	0.27	1.74	0.50	1.87	***	***	***
Asparagus	95.34	1.64	0.11	1.74	0.63	0.54			

(* = little; ** = satisfactory; *** = much)

Translated from E. Habersaat, Unsere Pilze, Hallwag, Bern, p.20.

TABLE 2

Calorific Value of Wild and Cultivated Fungi compared with other vegetables.

1 kg = 2.2 lb of:	Calories
Boletus edulis	343
Mushrooms	278
Milk Caps	209
Chanterelles	229
Carrots	340
Cabbage (white headed)	244
Red Cabbage	269
Cauliflower	248
Spinach	249

Translated from E. Habersaat, Unsere Pilze, Hallwag, 1946, p.21.

TABLE 3

Mineral Elements of Mushrooms compared with Mineral Elements of other vegetables (in percentage of the edible portion (Sherman)).

	Calcium	Magnesium	Potassium	Sodium	Phosphorus	Chlorine	Sulphur	Iron
Mushrooms	.014	.016	.384	.027	.098	.021	.051	.00073
Carrots	.045	.020	.308	.077	.041	.039	.022	.00062
Cabbage Headed	.046	.012	.294	.027	.034	.038	.067	.00043
Cauliflower	.122	.014	.222	.068	.060	.050	.086	.00094
Spinach	.078*	.050	.537	.89	.046	.066	.036	.00255

*Not nutritionally available.

Sherman, H.C. Chemistry of Food and Nutrition, 5th Edn., 1938.
The Macmillan Co., New York City.

TABLE 4

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
1.	GOOD KING HENRY CHENOPODIUM BONUS HENRICUS	GOOSEFOOT CHENOPODIACEAE	Yellow May - Aug	Valuable substitute for spinach. Leaves and young shoots may be eaten raw, or boiled. Peel the shoots, remove stringly parts, cut into equal lengths, tie in bundles and boil in salt water until tender.
2.	DANDELION TARAXACUM OFFICINALE	DAISY COMPOSITAE	Yellow Mar - Oct	The calorific value of Dandelion leaves is twice that of cabbage. Young leaves may be eaten raw and both the roots and leaves can be boiled. To remove the bitter taste change the water once, or twice.
3.	CORN SALAD or LAMB's LETTUCE VALERIANELLA LOCUSTA	VALERIAN VALERIANACEAE	Blue Apr - Jul	Very useful because it can be found from January onwards. The leaves can be eaten raw, or cooked like spinach.
4.	COMMON SORREL RUMEX ACE-TOSA	DOCK POLYGONACEAE	Red May - Jul	A few leaves can be found in winter. Very rich in minerals. The leaves can be eaten raw; they have a sharp taste and are frequently used in salads. Good in soup.
5.	CHICORY or WILL SUCCORY CICHORIUM ITYBUS	DAISY COMPOSITE	Blue Jul - Sep	The young leaves should be boiled. Change the water once, or twice to remove the bitter taste. The tender roots can be boiled like carrots. Roast and ground chicory give body and flavour to coffee, but it is not very palatable alone.
6.	CHICKWEED STELLARIA MEDIA	PINK CARYOPHILLACEAE	White Feb - Nov	Very tasty. The small leaves may be boiled and mixed with other vegetables.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
7.	BULRUSH, REEDMACE or CATS TAIL TYPHA LATIFOLIA	TYPHACEAE	Yellow Jun - Jul	The rind of the root and the young stem to a height of 18" is peeled off and the white tender part can then be eaten raw or boiled. The pollen from the flower spike can be used as flour.
8.	BLADDER CAMPION SILENE VULGARIS	PINK CARYOPHYLLACEAE	White Jun - Sep	The leaves may be boiled and mixed with other vegetables.
9.	BRAMBLE RUNDUS FRUTICUS	ROSE ROSACEAS	Pink Jun - Aug	Not only the blackberry is edible: the young tender shoots if boiled for ten minutes are very tasty. Tea can be made by pouring boiling water over a table-spoonful of fresh, or dried bramble leaves, which should then be allowed to draw for 5 - 10 minutes.
10.	BRACKEN PETERIDIUM AQUILINUM	POLYPODY POLYPODIACREAE		The young green shoots just as they are unfolding can be gathered and boiled for half an hour. They have a sticky juice and strong flavour. The roots can be roasted.
11.	DOG ROSE ROSA CANINA	ROSE ROSACEAE	Pink or White Jun - Jul	Natures richest store of vitamin A & C. Cut the hips in half, remove the central core of seeds and fry the remaining shell-like skin over a fire (or eat them raw).
12.	JACK-BY-THE-HEDGE ALLIARIA PETIOLATA	CABBAGE CRUOIFERAE	White Apr - Jun	The leaves and stems have a strong garlic flavour. They may be eaten raw. Most people prefer to mix them in small quantities with other leaves.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
13.	LADY'S SMOCK OR CUCKOO FLOWER CARDAMINE PRATENSIS	CABBAGE CRUOIFERAE	Pink Apr - Jun	Young leaves are good raw; older ones are peppery, but can be used to add flavour to stews and soups.
14.	LESSER CELADINE OR PILE WORT RANUNCULUS FICARIA	BUTTERCUP RANUNCULA CEAE	Yellow Mar - May	The leaves may be eaten raw or cooked as greens.
15.	GREAT BURDOCK ARCTIUM LAPPA	DAISY COMPOSITAE	Pink Jul - Sep	Cultivated as a vegetable in JAPAN. Peel the large tender leafstalk and flower stalk, then eat raw or boil. The root can also be boiled.
16.	FIELD, OR CORN POPPY PAPAVER	POPPY PAPAVERACEAE	Red Jun - Aug	Poppy leaves are not in the least narcotic! Gather young leaves before the plant flowers. Boiled in salty water the leaves have a nutty flavour and combine well with Sorrel.
17.	FIREWEED, ROSEBAY WILLOW HERB CHAMAEN ERION AUGUSTIFOLIUM	WILLOW HERB ONAGRACEAE	Pink Jul - Sep	The young stems and leaves can be boiled as greens and the mature stalks should be peeled and their sweetish interior eaten raw. The dried leaves of Fireweed make a good beverage.
18.	FLOWERING RUSH BUTOMUS	BUTOMACEAE	Pink Jul - Sep	The rootstalk should be peeled and boiled like potatoes. It can also be roasted.
19.	GOATS BEARD TRAGOPOGON	DAISY COMPOSITAE	Yellow Jun - Jul	Both the stems and roots have a sweet juice and may be eaten raw. Alternatively, they can be boiled until tender.
20.	GREATER STICH WORT STELLARIA	PINK CARYOPHILLACEAE	White Apr - Jun	The leaves and stems are edible raw, or boiled.

TABLE 4 *(contd.)*

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
21.	GREAT PLANTAIN PLANTAGO MAJOR	PLANTAIN PLANTAGINACEAE	Green May - Sep	The leaves are cooked as greens. It is often eaten in CHINA and AMERICA.
22.	GOUTWEED, or GROUND ELDER AEGODODIUM	PARSLEY UMBELLIFERAE	White May - Aug	The young leaves have a delicate flavour. Treat them in the same way as Nettle leaves. So do not eat them fully developed as they are nauseous.
23.	HAWTHORN, or MAY GRATAGUS MONOGYMA	ROSE ROSEACEAE	White or Pink May - Jun	In spring the young shoots are delicious raw. Later in the year the haws are juicy meaty and pleasing to the taste.
24.	IVY LEAVEL TOADFLAX CYMBALARIA	SNAPDRAGON SCHROPHULARIACEAE	Blue May - Sep	The small leaves may be boiled and mixed with other small plants.
25.	HOP HUMULUS LUPULUS	HEMP CANNABINACEAE	Green Jul - Sep	Common in hedges and open woods. The young shoots were very popular in Britain about 100 years ago and still are in countries such as Belgium. Peel, cut up and boil the shoots until tender.
26.	FENNEL FOENICULUM VULGARE	PARSLEY UMPELLIFERAE	Yellow Jul - Oct	The leaves can be eaten raw. The leaves also add a good flavour to soups and stews. The young roots and shoots can also be boiled.
27.	COMMON HORSETAIL EQUISETUM ARVENSE	HORSETAIL EQUISETACEAE	Green	The outer tissue can be removed from the young shoots of the Horsetail and the sweet interior eaten raw.
28.	JUNIPER JUNIPERUS COMMUNIS	CURRESSEACAE		The bluish black berries, which in some cases grow to the size of a marble, are full of nourishing pulp.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
29.	NARROW BUCKLER FERN DRYOPTE IS SPINULOSA			The young fronds may be collected in early spring and then boiled or steamed. The old leaf stalks on the underground stem can be roasted.
30.	NIPPLE WORT LAPSANA COMMUNIS	DAISY COMPOSITAE		Very high calorific value. Can be eaten raw or boiled for eight minutes.
31.	PIG NUT OR EARTH NUT CONOPODIUM MAJUS	PARSLEY UMBELLIFERAE	White May - Jun	The nuts can be found 2-3 inches below the surface. The tubers are edible raw or cooked.
32.	POLYPODY POLYPODIUM VOLGARE	POLYPODY		Select young stalks not more than 6-8 inches long. Break them off and draw them through the closed hand to remove the wool. Wash and boil for about 30 minutes.
33.	SCURVY GRASS CRUFLEARIA OFFICINALIS	CABBAGE CRUFIFERAE	White May - Aug	The small fleshy leaves of this little plant are pleasantly sharp and are valuable because they contain vitamin C.
34.	SHEPHERDS PURSE CAISEILA BURSA PASTORIS	CABBAGE CRUCIFERAE	White Jan - Dec	The small leaves may be boiled and mixed with other vegetables.
35.	SILVERWEED PONTENTILLA ANSERINA	ROSE ROSACEAE	Yellow May - Aug	The roots can be boiled, roasted, or eaten raw.
36.	SNOW THISTLE SONTHUS OIERACEUS	DAISY COMPOSITAE	Yellow May - Oct	The leaves and the thick succulent roots can be boiled or eaten raw. Very high calorific value.
37.	STINGING NETTLE URTICA/DIOLICA	NETTLE URTICA CEAE	Green Jun - Sep	All the year round young nettles can be found. They are valuable because of their high food value. Choose young ones 6-8 inches high. Chop them up and boil for six minutes.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
38.	SWELT CICELY MYARHIS ODARATA	PARSLEY UMBELLIFERAE	White May - Jun	The roots when boiled have a taste like chestnuts. The leaves may be used to add flavour in the same way as mint.
39.	TANSY TANACETUM VULGABE	DAISY COMPOSITAE	Yellow Jul - Sep	The leaves and flowers can be used to make a tea. One or two leaves can add flavour to an omelette, or stew.
40.	TUBEROUS CARAWAY BUNIUM BULBOCASTANUM	PARSLEY UMBELLIFERAE	White Jun - Jul	The tuberous root.
41.	WATER, ARUM or WILD	ARACEAE	White	Like most members of the lily family, the plant parts are filled with acrid crystals making these parts unplatable until the bitter-ness is discipated by drying or cooking. Having cooked the starchy roots they should then be pulverised and dried into a crude flour or farina. This can then be cooked as a sort of porridge.
42.	WATER CRESS NASTURTIUM OFFICINALE	CABBAGE CRUCIFERAE	White May - Oct	The leaves and stems can be eaten raw. If the water in the area might be contaminated, then boil these greens.
43.	WARER PURSLANE HEPLIS PORTULA	LYTHACEAE	Pink Jun - Sep	A very nutritious plant. All parts are good to eat raw. The leaves taste like watercress when eaten fresh and they are very good thirst relievers.
44.	WHITE MUSTARD SINAPIS ALBA	CABBAGE CRUCIFERAE	Yellow May - Aug	The young slightly peppery leaves and young flowers are good raw. The entire plant is tasty when cooked.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
45.	WILD CELERY APIUM GRAVEOLENS	PARSLEY UMBELLIFERAE	Green Jun - Sep	The peeled young stems and leaf stalks, tasting and smelling like celery are good raw. The young leaves are excellent when cooked, particularly with fish.
46.	WILD PARSNIP PASTINACA SATIVA	PARSLEY UMBELLIFERAE	Yellow Jun - Sep	The root.
47.	WILD RHUBARB RHEUM		White	The stem of the wild rhubarb can be eaten like cultivated rhubarb. The strong and bitter taste can be alleviated by repeated boiling in water.
48.	WINTER CRESS OR YELLOW ROCK BARBARIA VULGARIS	CABBAGE CRUCIFERAE	Yellow Apr - May	The leaves are bitter, but the young ones can be eaten raw. The bitterness can be lessened by cooking in several changes of water.
49.	CURLED DOCK RUMEX CRISPUS	BUCK WHEAT POLYGONACEAE	Green Jun - Oct	Gather the young leaves in spring and cook until tender. Change the water to remove the bitter taste.
50.	BROAD LEAFED DOCK RUMEX OBTUSIFOLIUS	BUCKWHEAT POLYGONACEAE	Red Jun - Sep	Same as the curled Dock.
51.	PATIENCE DOCK RUMEX RATIENTA	BUCKWHEAT POLYGONACEAE	Jun - Jul	Long cultivated as an early green. A good pot-herb.
52.	FAT HEN CHINOPODIUM ALBUM	GOOSEFOOT CHENOPODICEAE	Green Jul - Oct	A very common weed, found frequently in potato fields. Very tasty, cook leave for twenty minutes.
53.	SALT WORT SALECORNIA EUROPEFA	GOOSEFOOT CHENOPODIACEAE	Aug	Used as a pot-herb and also for pickling.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
54.	PERFOLIATE CLAYTONIA MONTIA PERFOLIATA	PURSLANE PORTULACEAE	White Apr - Aug	The leaves and stems can be eaten raw, or cooked.
55.	MARSH MARIGOLD or KING CUP CALTHA PALUSTIRIS	BUTTERCUP RANUNCULACEAE	Yellow Apr - Jul	The leaves and stems are boiled like spinach. Many people say that Marsh Marigold is superior in taste to spinach. The flowers are also edible.
56.	PRICKLY LETTUCE LACTUCA VIROSA	DAISY COMPOSITAE	Green Jul - Sep	Young leaves are very tender and can be eaten raw. If cooked, they need very little boiling.
57.	REDSHANK or WILLOW WEED POLYGONUM PERSICARIA	BUCKWHEAT POLYGONACEAE	Pink Jun - Oct	This is used as a good early salad plant.
58.	SCARLET PIMPERNEL SHEPHERDS WEATHERGLASS ANAGALLIS ARVENSIS	PRIMROSE PRIMULACEAE	Red Jun - Aug	The leaves and stems can be eaten raw, or cooked.
59.	SWEET FLAG ACORUS CALAMUS	ARUM ARACEAE	Green May - Jul	The rootstock has a pungent, biting, aromatic flavour. In America it is used by confectioners as a candy. To prepare it they cut it into slices and boil, the pieces are then removed again and boiled in a thick syrup.
60.	STAR OF BETHLEHEM OLNITHOGALUM UMPELLATUM	LILY LILLIACEAE	White Apr - Jul	The bulb of this plant is pleasant and very nutritious when cooked.
61.	SALISFY TRAGOPONGON PORRIFOLOUS	DAISY COMPOSITAE	Purple Jun - Aug	The roots when tender can be used as food and the tops are sometimes used as greens.

TABLE 4 (*contd.*)

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
62.	EVENING PRIMROSE CENOTHERA BIENNIS	WILLOW HERB ONAGRACEAE	Yellow Jun - Sep	The roots can be eaten and are said to be wholesome and nutritious. The young leaves can be eaten raw.
63.	DWARF MALLOW MALVA NEGLECTA ROTUNDIFOLIA.	MALLOW MALVACEAE	White Jun - Sep	The tender shoots and leaves are edible raw or cooked like spinach.
64.	SEA ROCKET OAKILE MARITIMA	CRUCIFERAE	Jun - Aug	The fleshy root can be ground and used as flour. The leaves can be eaten raw or used as a pot-herb.
65.	CLOVER TRIFOLOUM PRATENSE	PEA LEGUMINOSAE	Pink Jun - Sep	This and other specis of Clover are eaten raw.
66.	COMMON THISTLE CIRSIUM VULGARE	DAISY COMPOSITAE	Purple Jun - Oct	The base of the thistle flower head contains a "Nut" which is at its best for eating when the flower is fully opened, although they may be eaten while the flower is still in mature. After the flower head has been removed the soft "nut" will be found in the base of the flower and it may be eaten raw. These "nuts" are nutritious and satisfying.
67.	ELDER SAMBUCUS NIGRA	CAPRIFOLIACEAE	White Aug - Sep	The purple berries are edible, raw or cooked. The flowers can be mixed with batter and baked into cakes.
68.	REED GRASS PHRAGMITES COMMUNIS	PHRAGMITES GRAMINEAE	Aug - Sep	When the reed is punctured it exudes a pasty substance which hardens into gum. This is very rich in sugar. Indians in America also eat the roots of the reed.

TABLE 4 *(contd.)*

Ser	NAME	FAMILY	FLOWER	EDIBLE PARTS
69.	MOUNTAIN SORREL OXYRIA DIGYNA RHEUM DIGYNUM	RUMEX POLYGONACEAE	Green/Red Jul - Aug	The fleshy, succulent leaves have a pleasing acid taste and can be eaten raw, or as a pot herb.
70.	WILD STRAWBERRY FRAGARIA VESCA	ROSE ROSACEAE	White May - Jun	The strawberries.

FUNGI CHECK LIST

1. The following fungi are common and good, are excellent to eat:

LATIN NAME	ENGLISH NAME
AGARICUS ARVENSIS	HORSE MUSHROOM
AGARICUS AUGUSTA	
AGARICUS BITORQUIS	
AGARICUS CAMPESTRIS	FIELD MUSHROOM
AGARICUS SILCICOLA	
AGARICUS SUBPERONATUS	WOOD MUSHROOM
ARMILLARIA MELLAE	HONEY FUNGUS
AURICULARIA AURICULA	JEWS EAR
BOLETUS BADIUS	
BOLETUS EDULIS	CEP
BOLETUS CYANESCENS	
BOLETUS ELEGANS	
BOLETUS ERYTHROPUS	
BOLUTUS LUTUES	
BOLETUS PULVERULENTUS	
BOLETUS TESTACEOSCARBER	
CANTHARELLUS CIBARIUS	CHANTERELLE
CLITOCYBE GEOTROPA	
CLITOCYBE GIGANTEA	
CLITOCYBE NEBULARIS	CHEESE CAP
CLITOPILUS PRUNULUS	
COPRINUS COMATUS	SHAGGY INK CAP
CRATERELLUS CORNUCOPIODES	HORN OF PLENTY
FISTULINA HEPATICA	BEEF STEAK FUNGUS
HYDNOTRIA TULASNEI	TRUFFLES
LEPIOTA EXCORIATA	
" LIECOTHITES	
" PROCERA	PARASOL MUSHROOMS
" RHACODES	SHAGGY TARASOL
LYCOPERDON CAELATUM	MOSAIC PUFF BALL
" EXCIPULIFORNE	
" GIGANTEUM	GIANT PUFF BALL
MORCHELLA CONICA	MORELLA
" ESCULENTA	
" VALGARIS	
PHAELOLEOIOTA AUREA	
PHOLIOTA MUTABILIS	
PLEUROTUS OSTREATUS	OYSTER FUNGUS

LATIN NAME	ENGLISH NAME
RUSSULA AURATA	
" VIRESCENS	
SPARASSIS CRISPA	
TRICHOLOMA FLAVORVIRENS	
" GAMBOSUM	ST GEORGE'S MUSHROOM
" NUDUM	WOOD BLEWITS
" PORTENTOSUM	
" SAEVUM	WOOD BLEWITS
TUBER AESTIVUM	TRUFFLES

The following fungi are known to be poisonous:

LATIN NAME	ENGLISH NAME	REMARKS
AMANITA MUSCARIA	FLY AGARIC	Poisonous but not deadly
" PANTHERINA	PANTHER CAP	Very poisonous
" PHALLOIDES	DEATH CAP	Deadly
" UMBRINA		Poisonous
" VIROSA	DESTROYING	Deadly
" SPISSA		Poisonous
" PORPHYRIA		Poisonous
BOLUTUS PACHYPUS		Poisonous
CLYTOCYBE RIVULOSARES		Poisonous
" DEALBATA		Poisonous
CORPINUS ATRAMENTARIUS	SMOOTH INK CAP	Slightly poisonous
" MICACEUS	GLISTENING INK CAP	Slightly poisonous
ENTOLOMA LIVIDUM	LEADEN ENTOLOMA	Deadly
GYROMITRA ESCULENTA	LORCHEL	Poisonous when raw but edible if boiled and water thrown away.
HERBELOMA CRUSTULININFORME	POISONOUS PIE	Slightly poisonous
HYPHOLOMA FASCICULARE	SULPHUR TUFT	Poisonous
" SUBLATERITIUM		Slightly poisonous
INOCYBE GEOPHYLIA	EARTHY INOCYBE	Poisonous
" ASTEROSPORA		Poisonous
" NAPIPES		Poisonous
" PATOULILLARDII		Deadly
" MACULATA		Poisonous
" PRAETERVISA		Poisonous
" FASTIGIATA		Dangerously poisonous
" GRISO LILACINA		Poisonous
" LACERA		Poisonous

LATIN NAME	ENGLISH NAME	REMARKS
LACTARIUS BLENNIS		Poisonous
LACTARIUS HELVUS		Poisonous
LACTARIUS PYROCALUS		Slightly Poisonous
LACTARIUS QUIETUS		" "
LACTARIUS RUFUS		Poisonous
LACTARIUS TORMINOSUS	WOOL MILK CAP	Slightly Poisonous
LACTARIUS UVIDUS		Poisonous
LACTARIUS VELLEREUS		Slightly Poisonous
LACTARIUS VIETUS		Slightly Poisonous
LACTARIUS CILICOIDES or " PUBESCENS		" " " "
LACTARIUS SPINOSULUS		" "
LACTARIUS SCROBICULATUS		Poisonous
LACTARIUS TRIVIALIS		"
LACTARIUS FLEXUOUSUS		"
PAXILLUS INVOLUTUS		Poisonous when raw
PSALLIOTA XANTHODERMA	YELLOW STAINING MUSHROOM	Poisonous
RUSSULA BADIA		"
RUSSULA EMETICA	THE SICKNER	"
RUSSULA FELLEA	BITTER RUSSULA	"
RUSSULA GRAGILLIS		Slightly Poisonous
RUSSULA OCHROLEUCA		Poisonous
RUSSULA QUELETII		"
RUSSULA SANGUINEA		Slightly Poisonous
RUSSULA SARDONIA		Poisonous
RAMARIA FORMOSA		"
SCLERODERMA AURANTIACUM	COMMON EARTH BALL	"
STROPHARIA AERUGINOSA	VERDIGRIS AGARIC	Poisonous

EDIBLE SEAWEED

Ser	LATIN NAME	ENGLISH NAME	COLOUR	EDIBLE PARTS
1.	ULVA LACTUCA	SEA LETTUCE	Green	Very common. Wash it and the entire plant can be eaten. Found both sides of the Atlantic and Pacific.
2.	LAMINARIA SACCFARINA	SUGAR WRACK	Brown	The most common edible brown seaweed. The frond or leaf can be eaten raw when young. The young stalks are sweet to the taste. Found on both sides of the Atlantic and on the coasts of China and Japan.
3.	AIARIA ESCULENTA	EDIBLE KELP	Brown	It should be boiled to soften it, after which it can be mixed with vegetables or soup. It is found on both sides of the Atlantic and Pacific.
4.	CHONDRUS CRISPUS	IRISH MOSS	Brown	The entire plant can be eaten. Boil it into a mild drink; when mixed with milk it gives a blancmange. Found on both sides of the Atlantic and Pacific.
5.	PORPHYRA	LAVER	Shiny red or Dark purple	Common and has been used as food for centuries. Still marketed in S Wales. Clean and boil until tender (about six hours in winter and eight in summer). Mince and then fry. Found on both sides of the Atlantic and Pacific.
6.	RHODYMENIA PALMATA	DULSE	Red	Rich in protein and can be stewed to give a nutritious soup. The young fronds can be eaten raw but are tough. It is often rolled and used as a chew. It is sweet to the taste. Found on both sides of the Atlantic and in the Mediterranean.
7.	LAMINARIA DIGITATA	CARWEED	Red	The leaf can be stewed or fried.

CALENDAR OF WILD FOODS

JANUARY-MARCH

Corn Salad
Dandelion
Herb Bennet
Horseradish
Laurel
Laver
Lettus Laver
Sauce-all-alone
Stinging Nettle (March)
Tansy
Watercress

APRIL-JUNE

Corn Salad
Dandelion
Elder
Fairy Ring Mushroom (May-June)
Fennel
Field Poppy (May-June)
Ground Elder
Herb Bennet
Hop (May-June)
Horseradish
Lady Smock
Laurel
Nipplewort
Pig Nut (June)
Salad Burnet
Samphire
Sauce-all-alone
Shaggy Cap Mushroom (May-June)
Sorrel
Sow Thistle
Stinging Nettle (April-May)
Sweet Cecily (May-June)
Tansy
Watercress
Wood Sorrel

JULY-SEPTEMBER

Ash (August)
Barberry (Sept)
Beefsteak Mushroom
Bilberry (Aug-Sep)
Blackberry (Sep)
Blewit (Sep)
Corn Salad
Crab Apple (Sep-Oct)
Dandelion
Elder
Fairy Ring Mushroom
Fennel
Field Mushroom
Field Poppy
Ground Elder
Hawthorne (Sep)
Hazel Nuts (Sep)
Herb Bennet
Horse Mushroom
Horseradish
Juniper (Sep)
Lady Smock
Laurel
Laver
Nipplewort
Parasol Mushroom
Pig Nut
Rose (Sep)
Rowan (Aug-Sep)
Salad Burnet
Sauce-all-alone
Shaggy Cap Mushroom
Sloe
Sorrel
Sow Thistle
Strawberry (Jul-Aug)
Sweet Cecily
Tansy
Watercress
Wheat (Aug-Sep)

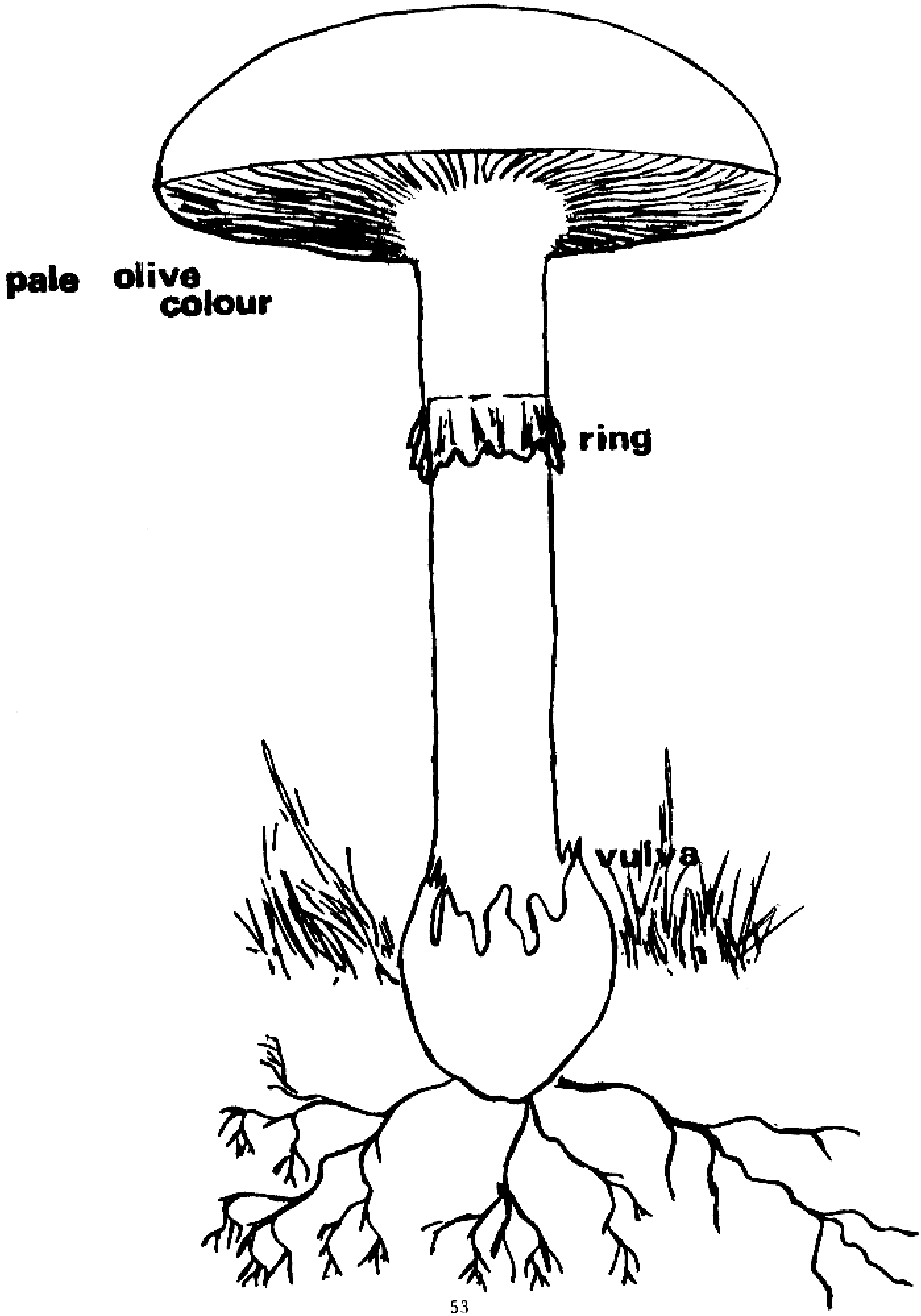
JULY-SEPTEMBER (contd.)

Whortleberry (Aug-Sep)
Wood Sorrel
Yellow Goat's Beard (Sep)

OCTOBER-DECEMBER

Barberry (Oct)
Beech Nuts (Oct-Nov)
Beefsteak Mushroom (Oct-Nov)
Blewit (Oct-Nov)
Corn Salad
Dandelion
Elder (Oct)
Fairy Ring Mushroom (Oct)
Field Mushroom (Oct)
Hawthorn (Oct)
Hazel Nuts (Oct)
Herb Bennet
Horse Mushroom (Oct)
Horseradish
Juniper (Oct)
Lady Smock (Oct)
Laurel
Laver
Lettuce Laver
Parasol Mushroom (Oct)
Rose (Oct)
Sauce-all-alone (Oct-Nov)
Shaggy Cap Mushroom
Sloe (Oct)
Sweet Cecily (Oct)
Tansy (Oct)
Watercress.

Amanita Phalloides



PART 7

SNAILS

SNAILS

(Extract from a letter from the Proprietor of the Miners' Arms, Priddy, Nr. Wells, Somerset.)

"Snails have been eaten in many countries for thousands of years, the Romans being credited with learning how to fatten them for the table. Although many varieties of snail are edible, in Europe there are only two varieties of sufficient size to be worth preparing. The larger one, Helix Pomatia - known variously as the Roman Snail, the Apple Snail, or by the French as the Large White Snail (Gros Blanc), is the one more usually served in restaurants. In France they can be obtained live in many markets, but these days they are more usually in tins or frozen. After a fairly elaborate cleaning process they are cooked in a court bouillion of vegetables and white wine and then stuffed back into their shells with a garlic butter sauce. In England tinned, and occasionally frozen, Gros Blancs are available in delicatessen shops, but in England the eating of snails has been confined to the chi-chi restaurants, with the exception of the north-east of Somerset and Bristol, where snails have been eaten for generations, although the practice is these days not very common. Snails used to be sold in fish shops and on stalls in Bristol and Bath, much as winkles are sold at the seaside, but I know of no shops where they can be obtained to-day.

The snail eaten in these parts is Helix Asperse, the Common Garden Snail. This variety is also eaten in France, where it is known as the Little Grey Snail, (Petit Gris). It is not so esteemed as Gros Blanc but I suspect that this is on account of its smaller size rather than its lack of quality. It is, in fact, much to be preferred to the Gros Blanc, for it is more succulent and better flavoured, and it is tender whilst Gros Blanc is inclined to be rubbery. Furthermore, although its shell is a good deal smaller than Gros Blanc, the snail inside is more or less the same size.

In France snails are cultivated, and although they are frequently collected from the wild and fattened or even eaten straight away, most of them are commercially produced. In fact they are also synthesised from the lungs of sheep!

In England, as far as I know, I am the only cultivator of snails, which I rear and fatten for use in our restaurant. We have not previously supplied them other than cooked to be eaten here, but this year we expect to start supplying them to one or two other restaurants who are interested in them.

The local tradition of eating snails was simply to boil them and eat them like winkles. Sometimes after boiling they were bottled in vinegar. It is also reported, and I believe, that roadmen would roast them on a shovel over the tar brazier. Our method is more elaborate.

I do not know about snails found outside Europe. I believe that there is a giant snail in Africa which is cooked and carved in slices, but whilst there may be poisonous snails elsewhere, there is only one poisonous snail in England, and it is far too small to attract anyones attention. Gros Blanc can be found in this country, but it is rare; Petit Gris is, of course, everywhere.

The only risk with snails is that they may have eaten something which, although harmless to them, is injurious to humans, and as it is not practicable to eviscerate a snail before eating it, any more than to eviscerate a shrimp or whitebait, one must make sure that a snail is starved, or only allowed to feed on material that is harmless to humans before it is cooked.

This means quarantining the snails for four or five days before preparing them. The risk in not doing so is slight, but it is as well to eliminate it. Of course only live snails should be collected. Hibernating snails are perfectly edible, but they should be looked over to see that they appear healthy. If the closure of the shell of a hibernating snail appears to be receding the snail should be discarded. For one that is not hibernating common sense will indicate whether it is healthy. Snails sleep during the day, generally but although, even when not asleep, they do not exactly prance about, it is not difficult to tell whether a snail is active or lethargic. The latter should be allowed to sleep it off or die from natural causes.

Having collected an adequate sufficiency of suitably large snails, (small ones are too much of a fiddle to bother with) and quarantined them for a few days, (during which period they can be fed on any wholesome green leaves, or bran, flour or bread soaked in water) they must then be soaked in slightly salty water. The vessel requires a lid, otherwise the snails will return to nature. Every four hours or so a little more salt should be added. This also provides an opportunity to return the more athletic members of the party from the underside of the lid to the ablutions. (The purpose of this process is to cause the snails to purge their alimentary tracts.)

After 24 to 36 hours the snails, most of which will now be dead should be removed from the salty water, rinsed, and plunged into rapidly boiling water. The water is brought back to the boil and boiling continues for about 3 to 4 minutes. A large vessel is necessary as a froth forms on the top and, if the vessel is nearly full, it will come over the side, thus dousing the fire. (The rapid boiling removes slime and grit from the snails.)

After boiling the snails are removed from the water, rinsed, and then simmered for about four hours. They can be simmered in plain or slightly salty water, but it is better if vegetables, herbs, and wine or cider is added to the water.

After simmering the snails are ready for stuffing with the sauce. This should be largely butter, and the cooks own taste will suggest other ingredients. The French use parsley and a ton or two of garlic; we use herbs, cream and cheese. People seem to prefer ours.

After stuffing, when the butter has hardened, the snails can be stored in a refrigerator or deep frozen.

To serve, the prepared snails are put, mouth upwards, on special snail plates, which have little depressions in them to steady the snails and are then put in a moderate oven for about ten minutes; they are then put under a grill for about half a minute until the butter is sizzling and are then eaten.

To eat, the snails are picked up by the shell using special snail tongs or paper - the shells being hot - and the snail prized out with a little fork or spike. They are usually eaten with brown or white bread, which serves to mop up the sauce, which some people consider the point of the whole exercise.

So much for snails a la gourmet. I doubt, however, whether this could realistically be regarded as a practicable survival technique. Nor, of course, would it be necessary. Snails can, I am told, be eaten raw. The teller did not go on to say whether the eater survives, but probably he would. Simple boiling or roasting, however, would certainly be satisfactory, and if there is time or opportunity to include some of the cleaning process, so much the better.

The nutritional value of the snail is exceptionally high, particularly in proteins and mineral salts. (Legendarily, however, it is an aphrodisiac. How this might affect the prospect of survival is a matter that you will, no doubt, take into account before recommending snails to escapers.)"

PART 8

ANIMAL TRAPS AND SNARES

ANIMAL TRAPS AND SNARES

"Hardships' You don't know what hardships are".

Motto of the Australian Overlanders

INTRODUCTION

Animal food will give the most food value per pound. Anything that creeps, crawls, swims or flies is a possible source of food. The Chinese relish fat young puppies - any evader can also enjoy them if he is lucky to get his hands on the fluffy beast.

If there is wild life about they will leave their signs - game trails, big or small, fresh droppings, tree scratches, burrows, nests and so on. If the signs are fresh then obviously there is game about that can be trapped. If there are no recent signs of wild life it is a waste of time and effort to set traps.

There are many elaborate types of traps which can be used to catch different types of animals and birds, both large and small. To make them is both time consuming and tiring - and often to no avail! The evader, or escaper needs traps that are simple and easy to construct. This precis aims to show just that.

WHERE TO SET TRAPS

Find the animals tracks, or "runs" which lead from its home to its feeding grounds or watering places. Along these runs are the best places to set traps because the animal will come in only one of the two directions. This type of place is far more successful than a trap which is set in the open with bait to attract an animal.

Avoid setting a trap close to an animals home, or very close to a water hole, because at these points the animal will tend to be very alert. Anything suspicious will make the animal stay at home for days, or avoid it.

At last light, or first light animals are on the move. Therefore it is at these times that traps are normally most successful.

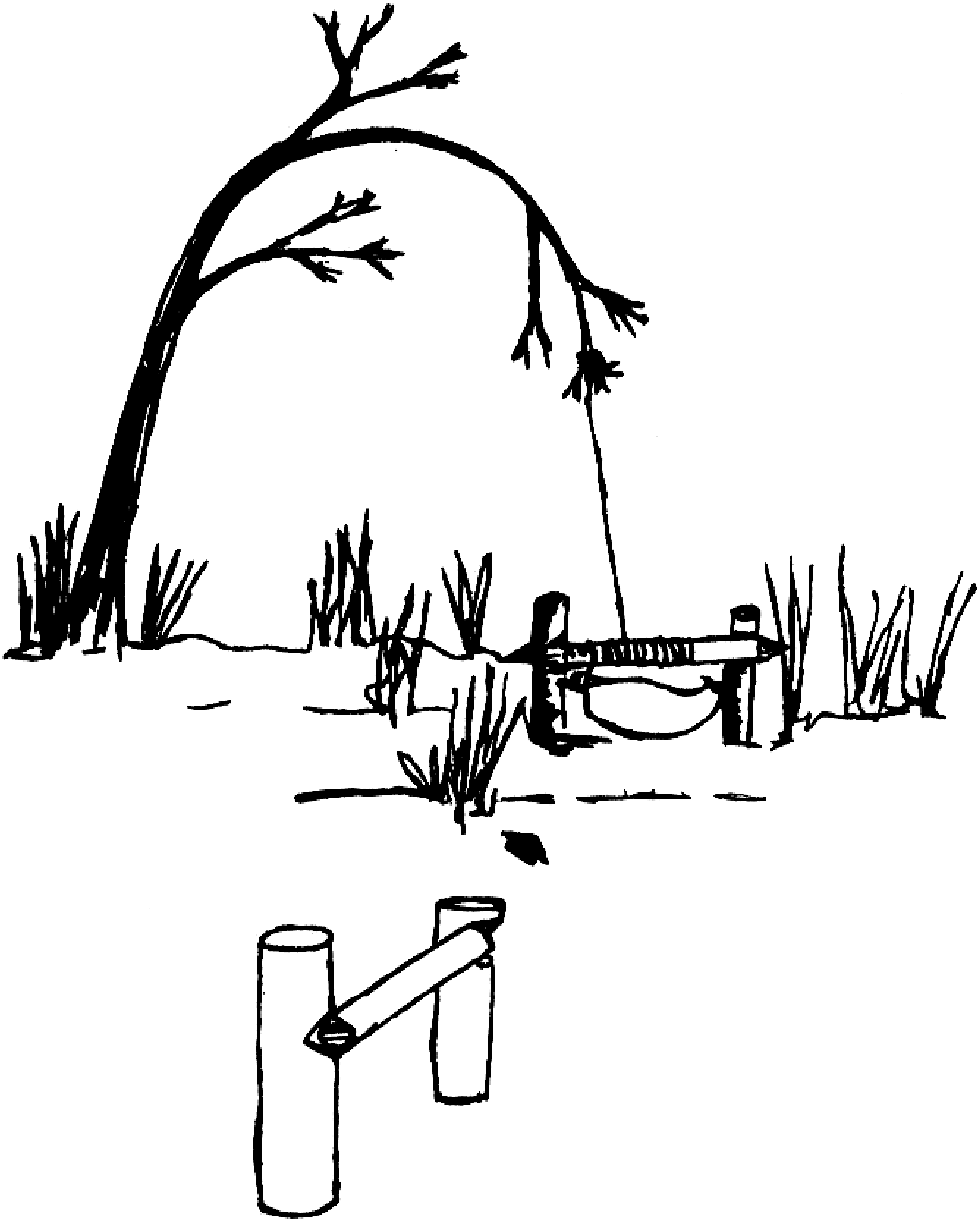
HOW TO MAKE A GOOD TRAP

A knife and wire, string or cord are invariably essential. The trap must be strong, securely fixed and the pull up sapling needs to be springy so as to lift the snared animal or bird clear of the ground and so out of reach of other animals.

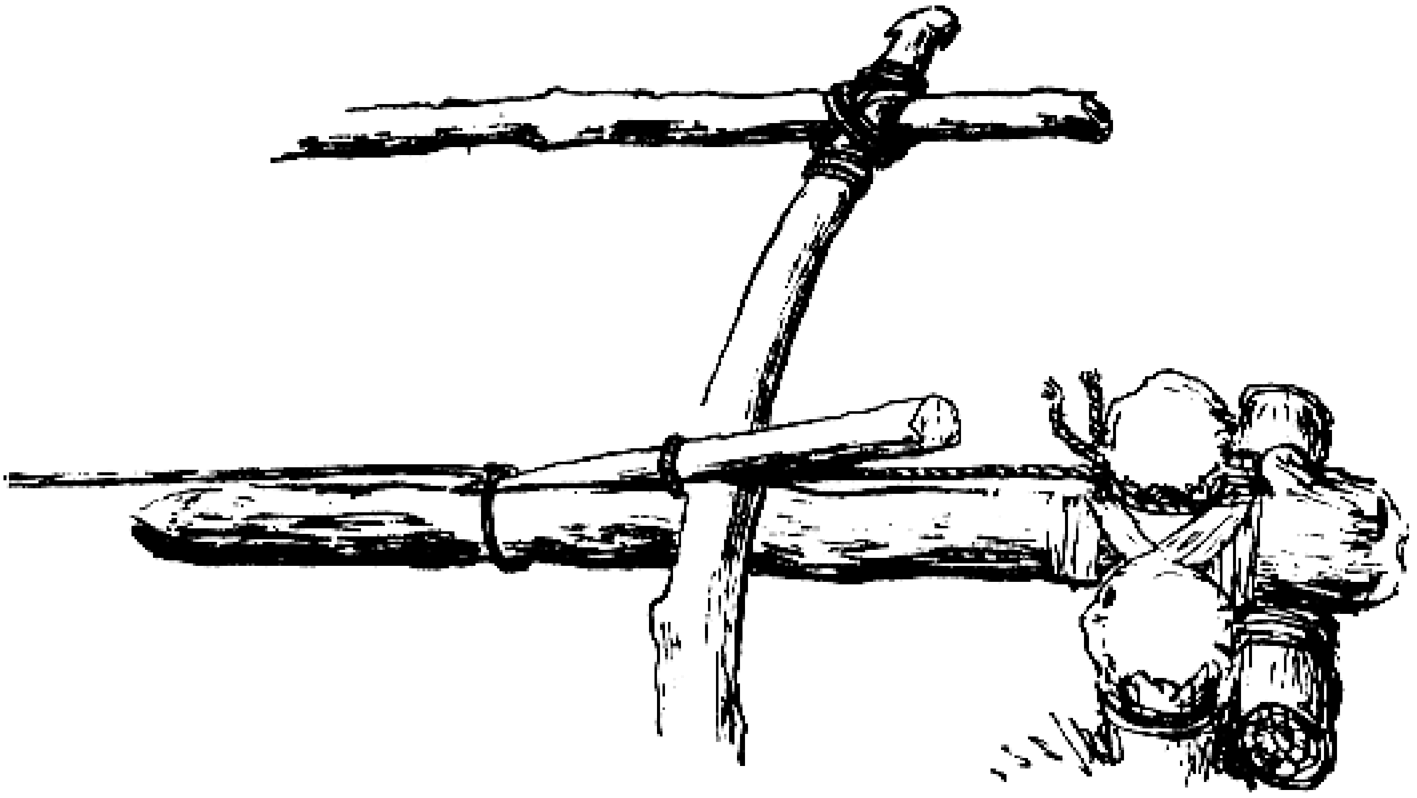
For types of traps recommended see sketches attached.

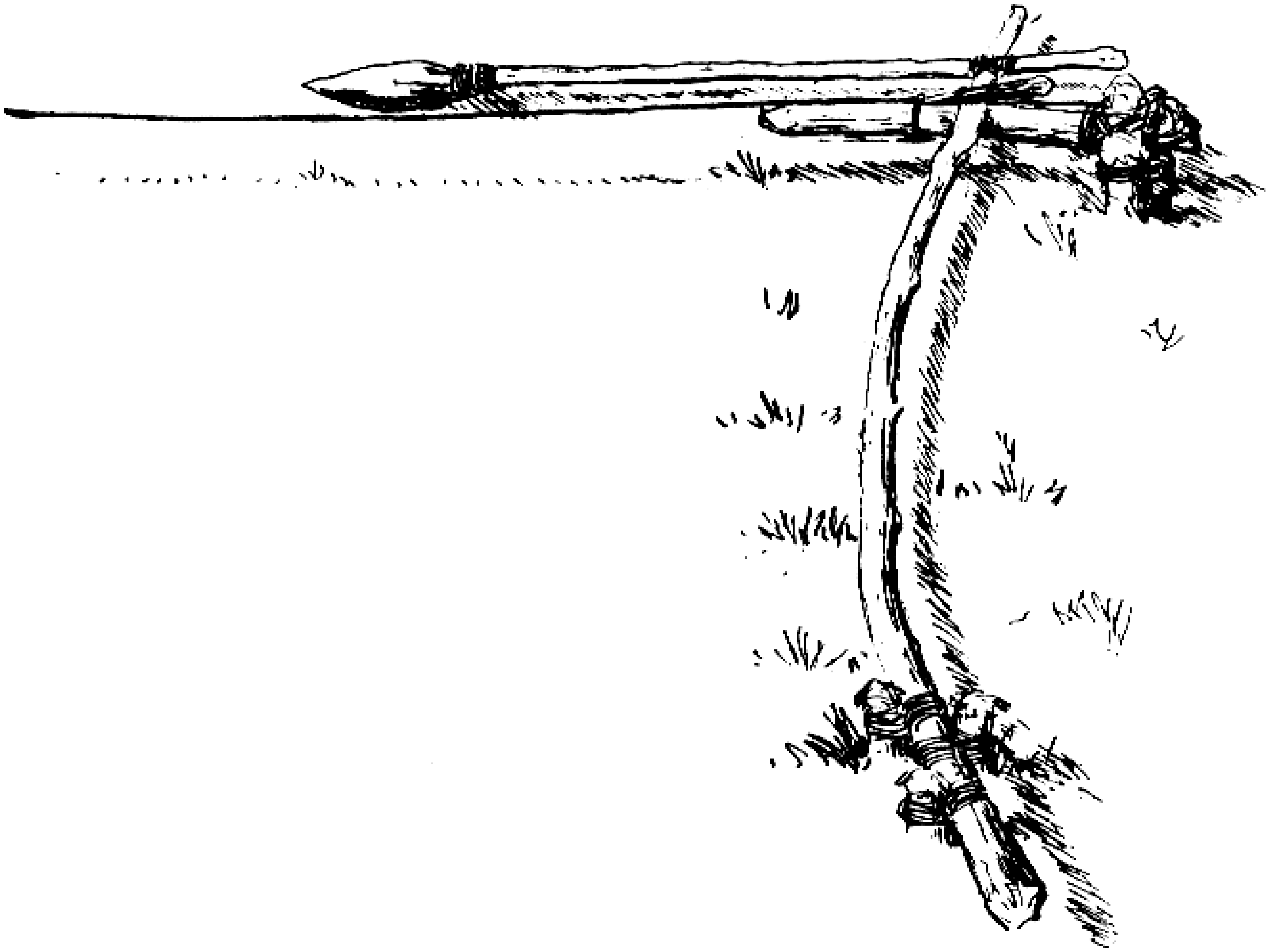
When setting traps avoid disturbing the natural setting of the surroundings, grass, shrub and soil etc. Remember to camouflage all cuts made in wood and saplings used and use materials which blend with the natural surroundings.

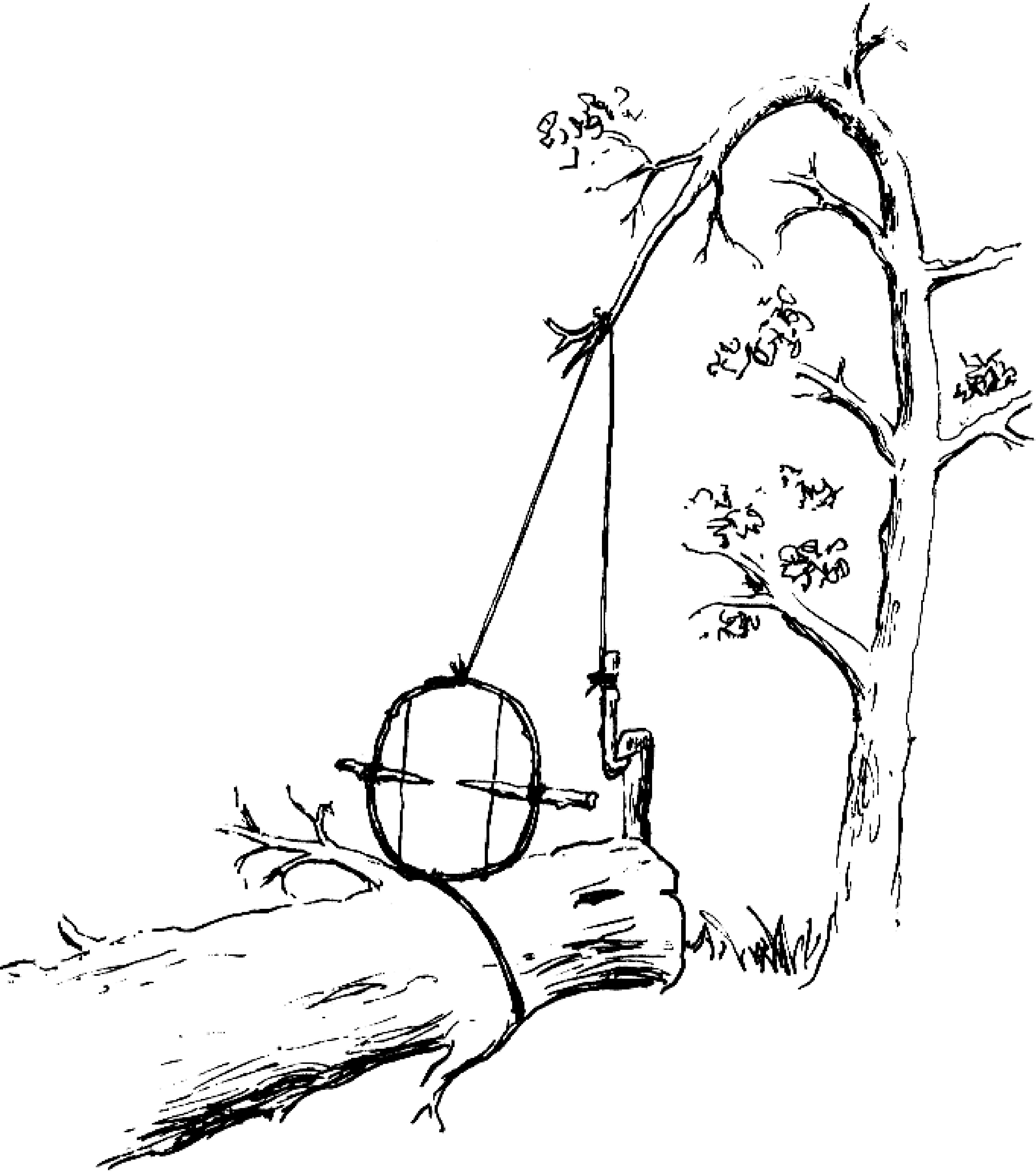
ROLLER SPRING SNARE



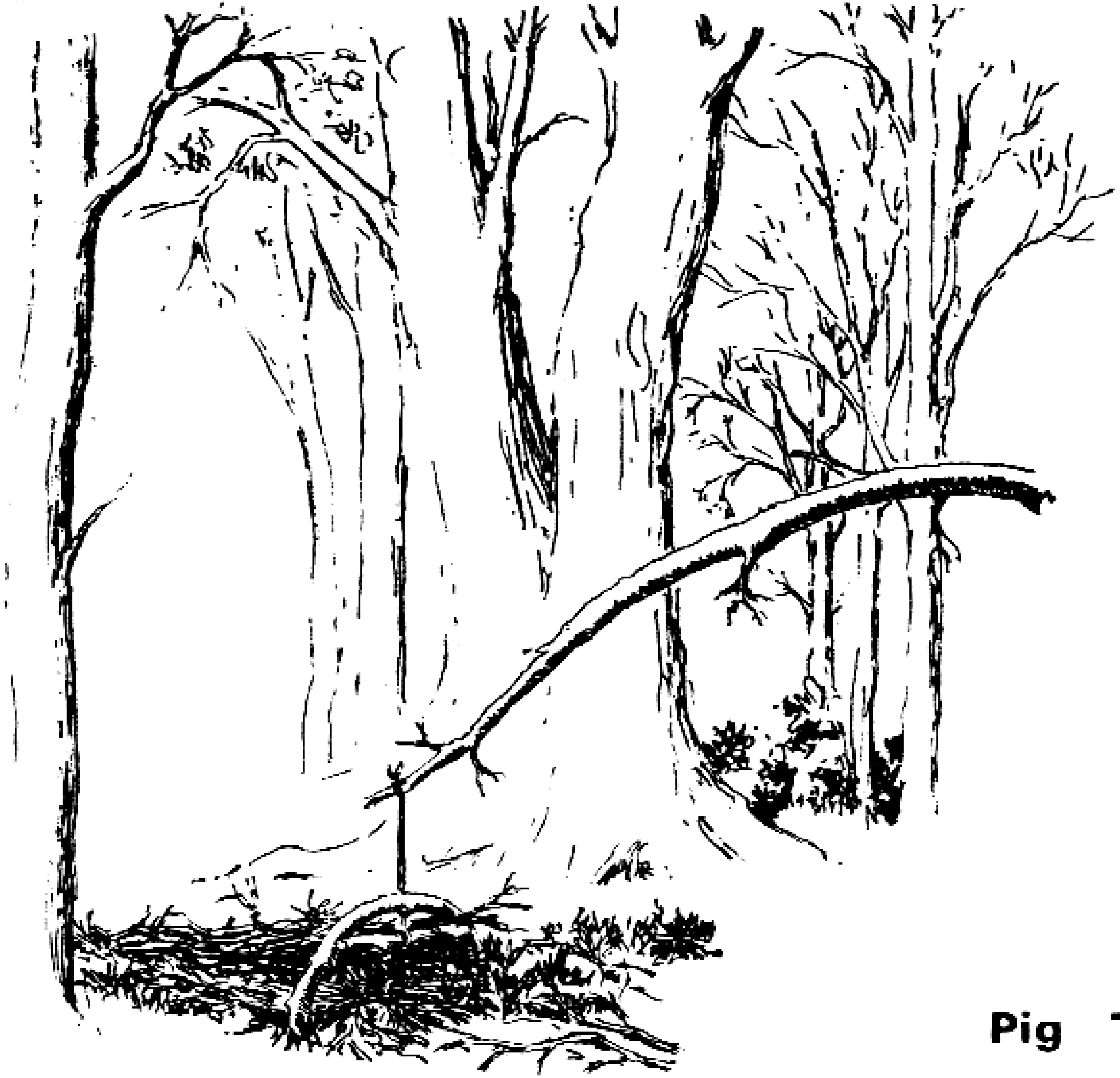
Spear Trap

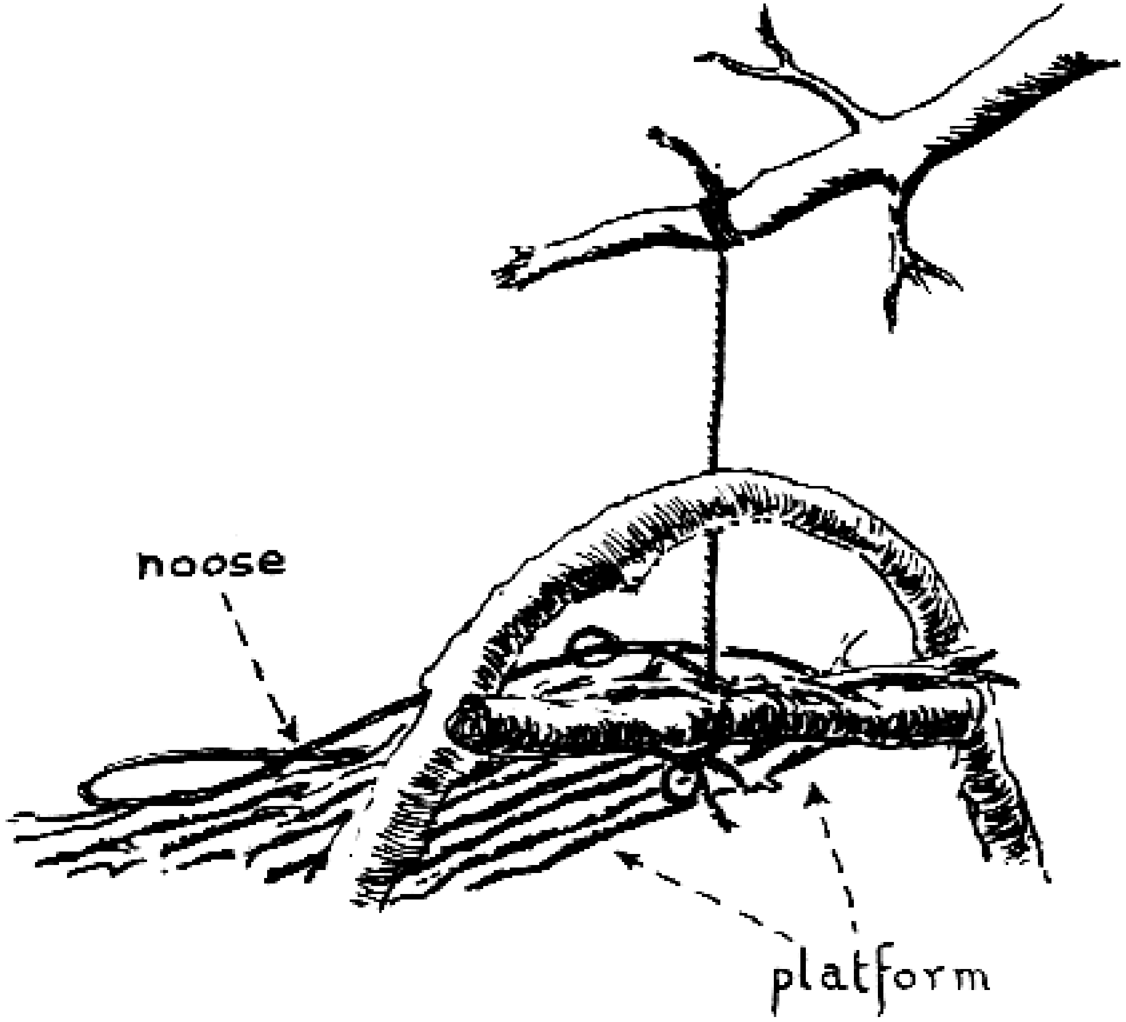






Monkey Trap

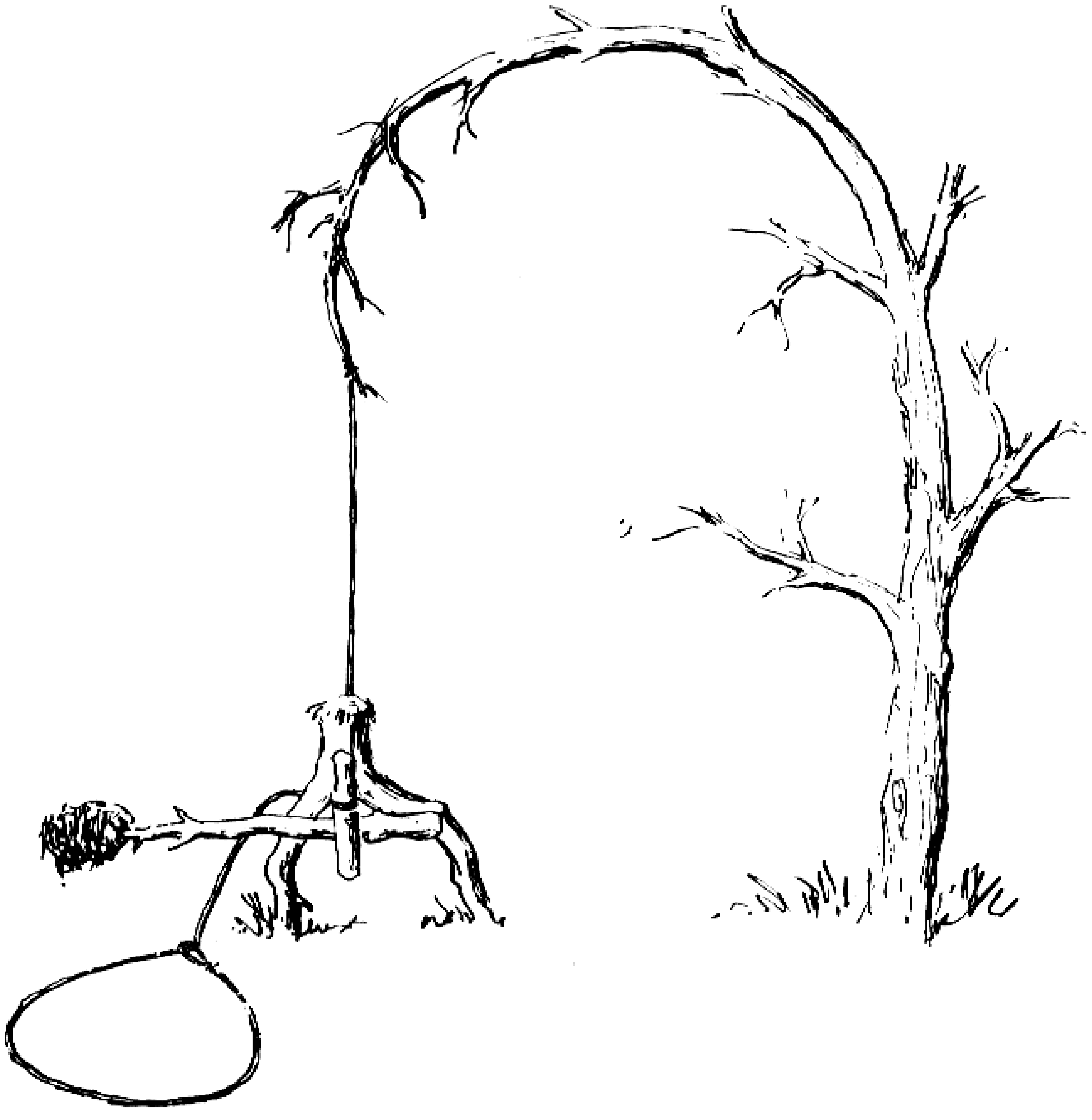




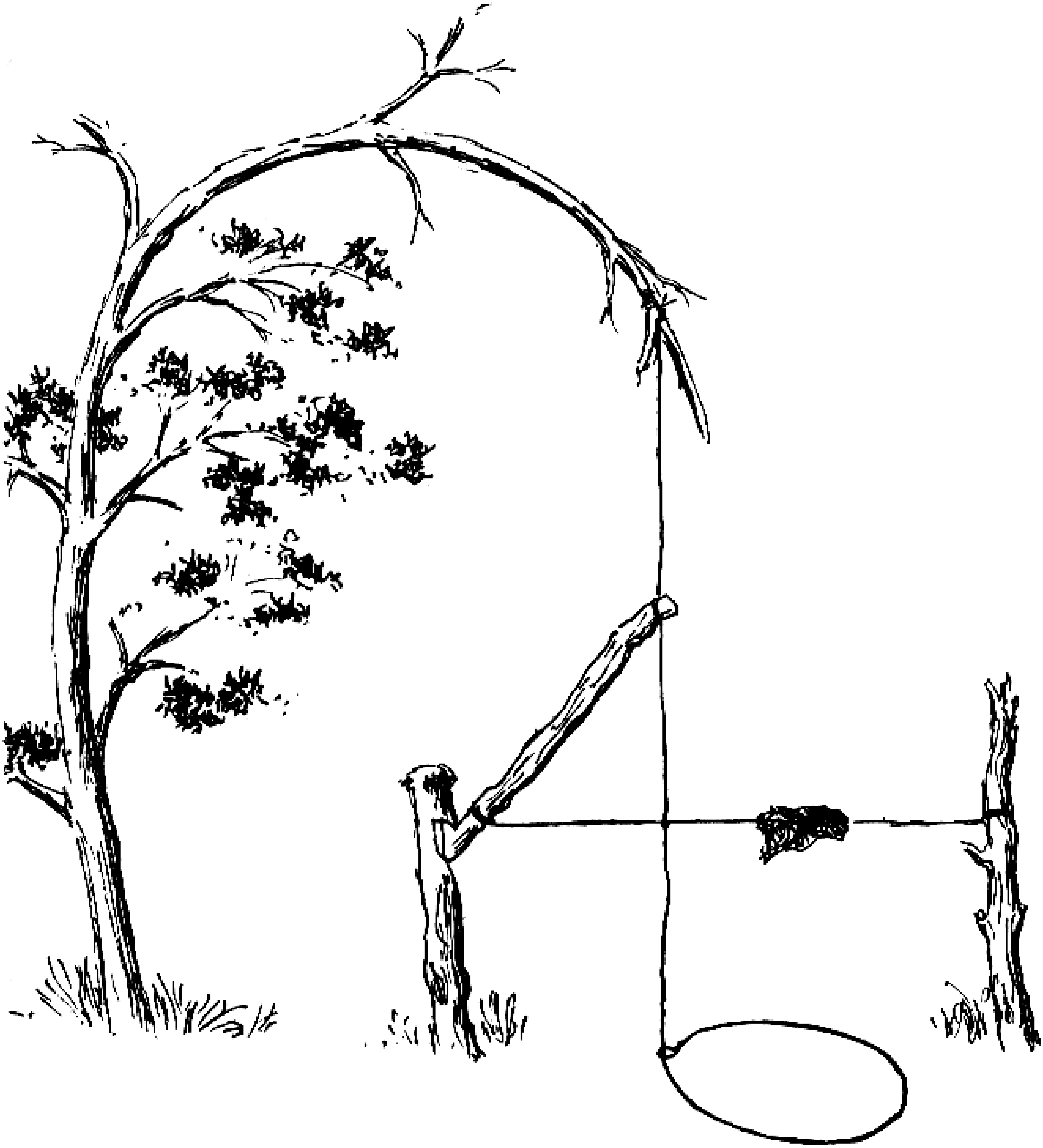
Pig Trap (panjok seagagan)

Platform Trap

forked stick to hold animal

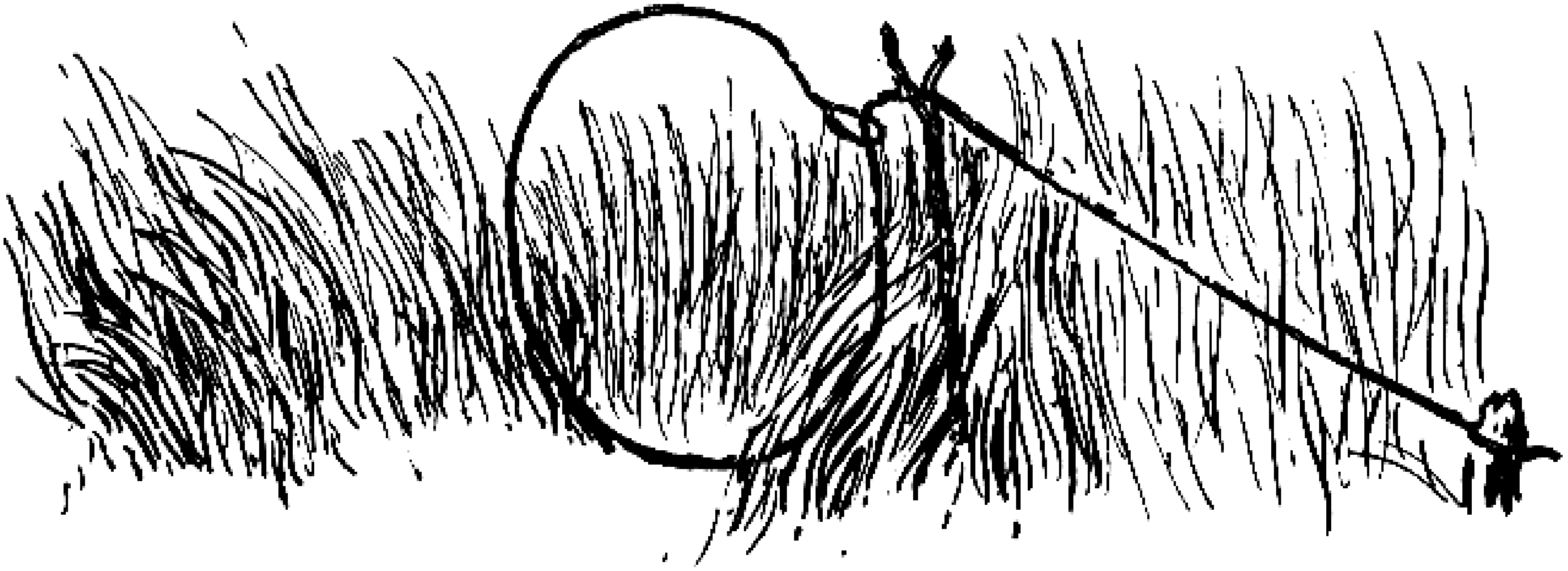


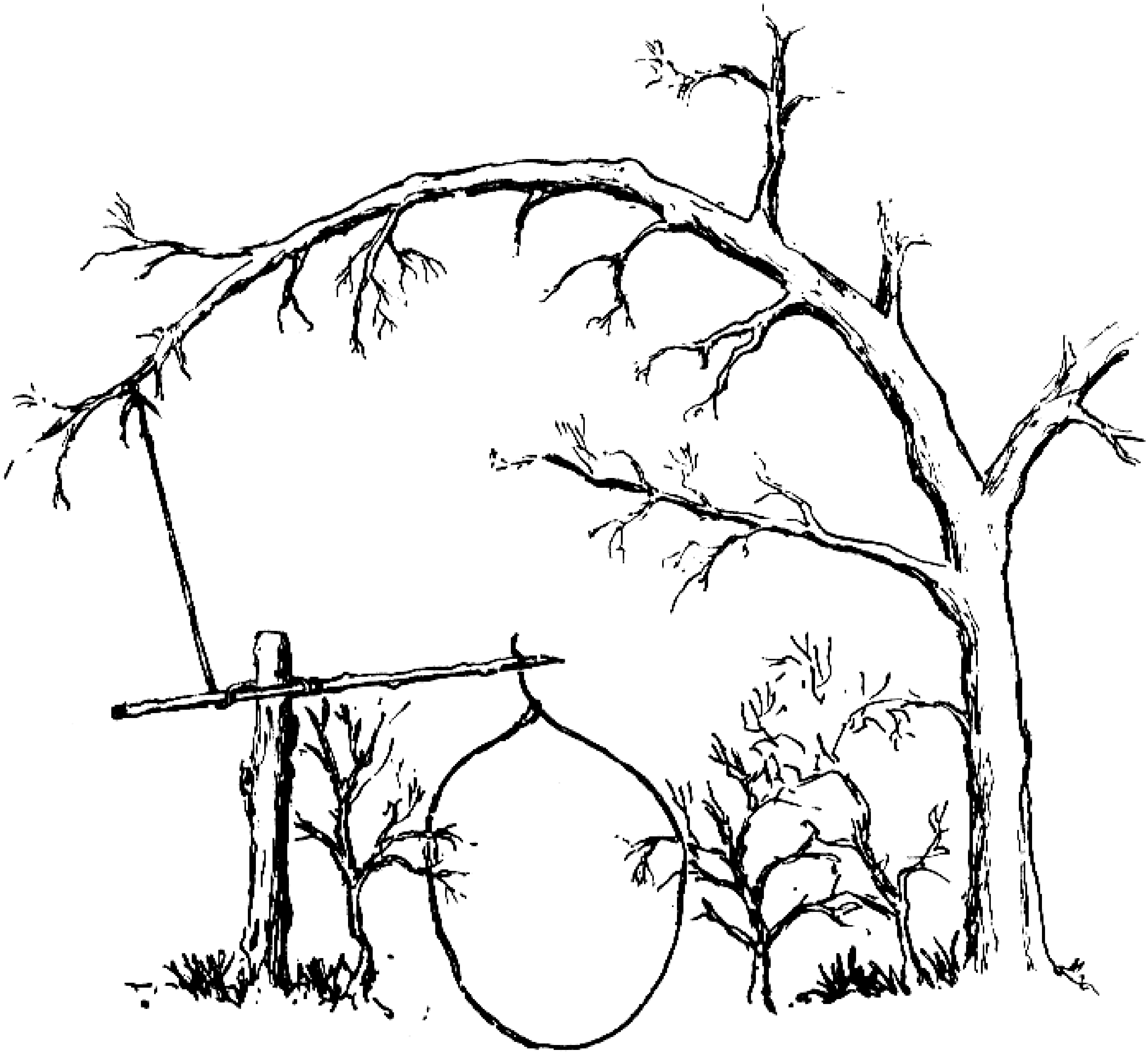
Baited Spring Leg Snare



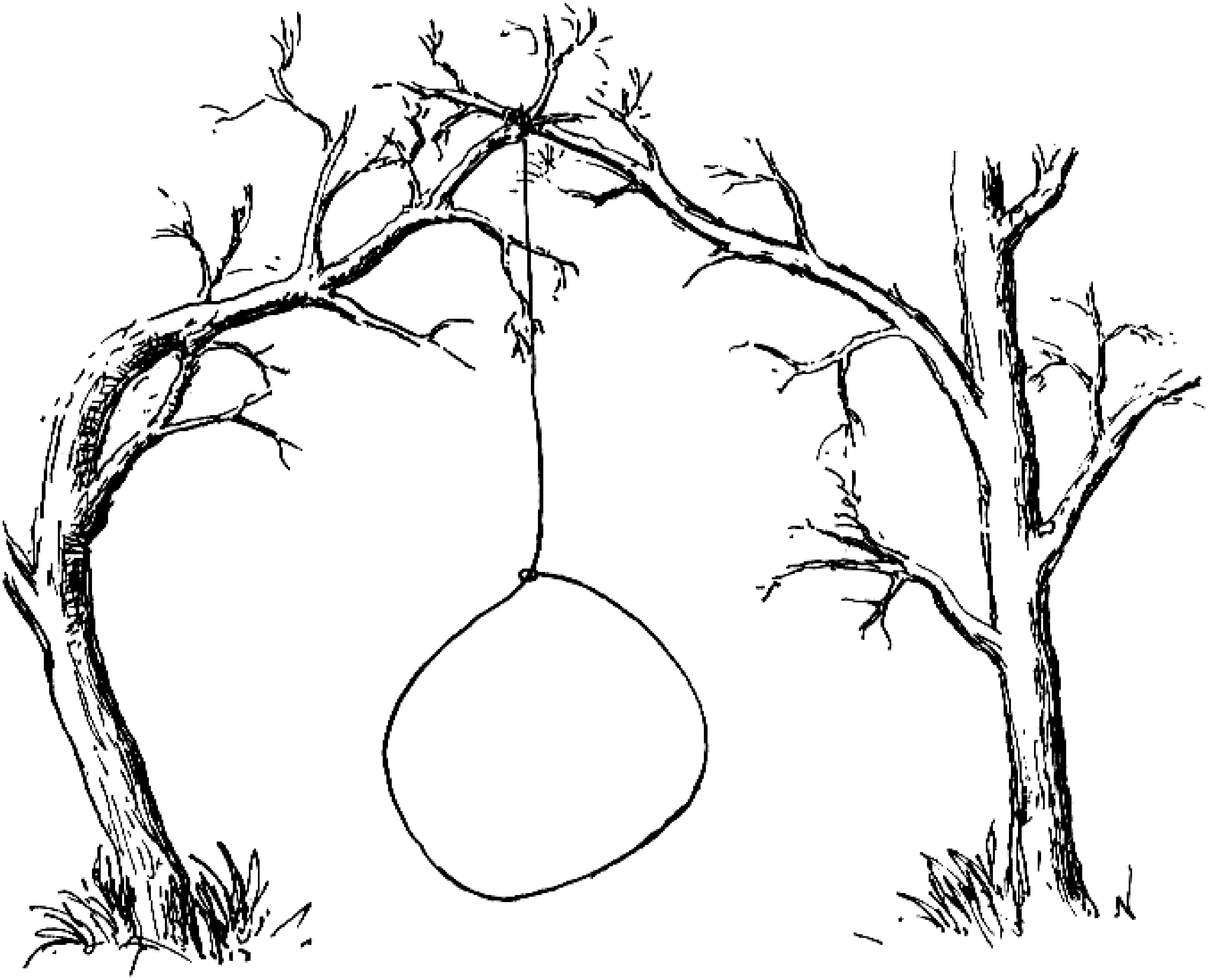
Baited Spring Snare

Rabbit or Hare Snare



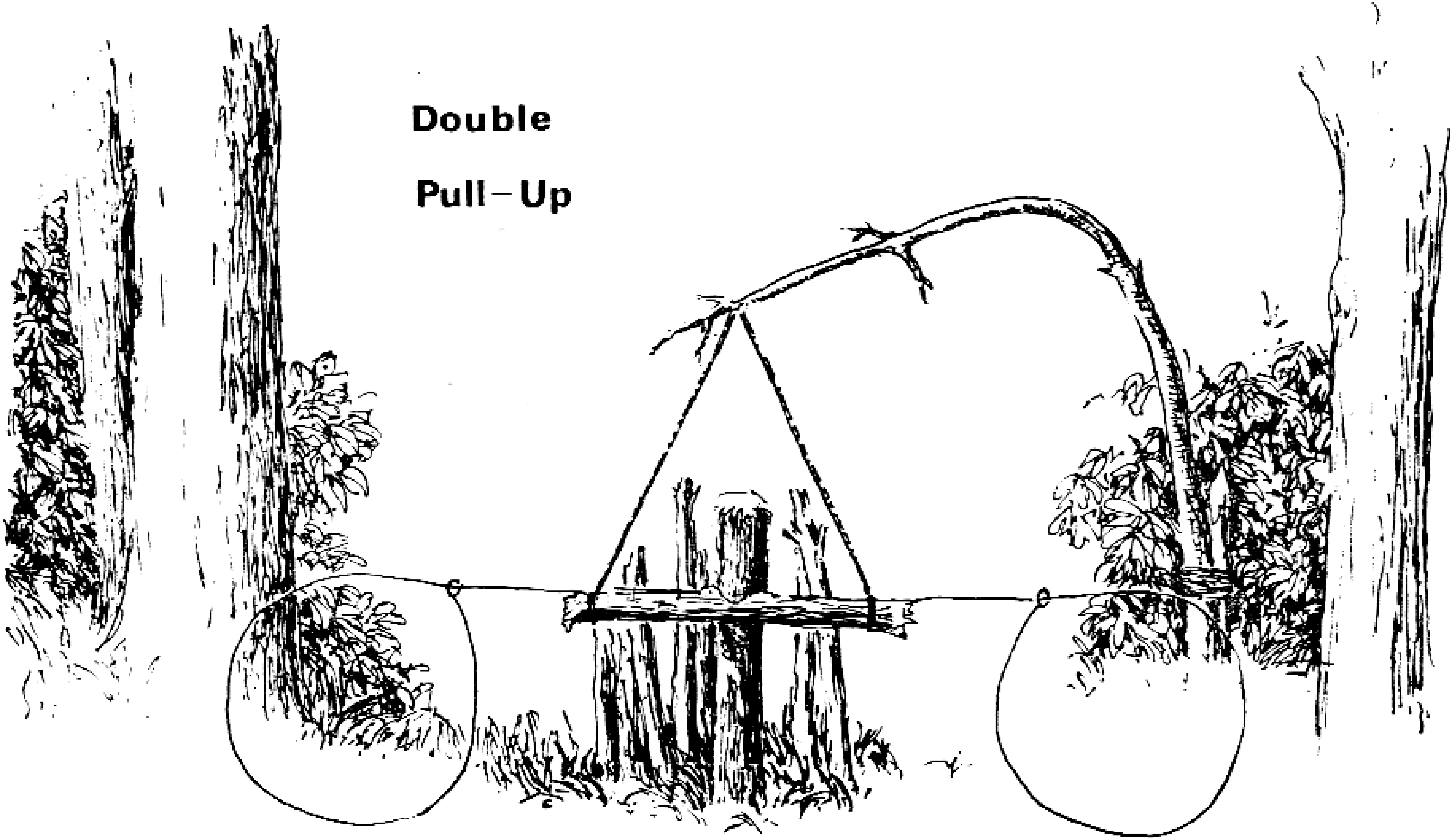


Spring Snare

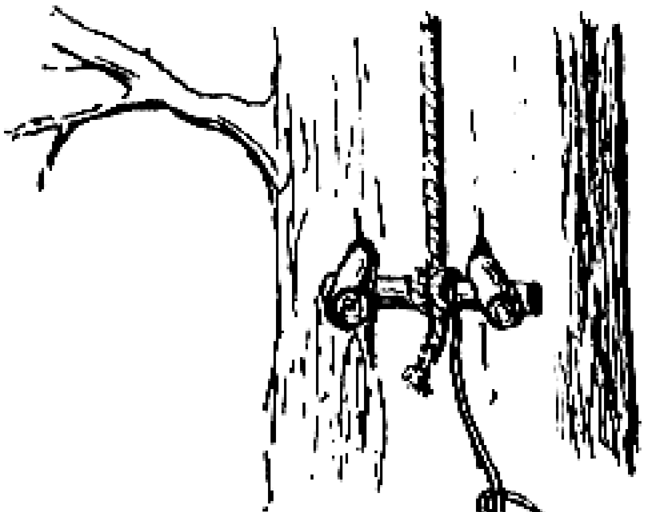


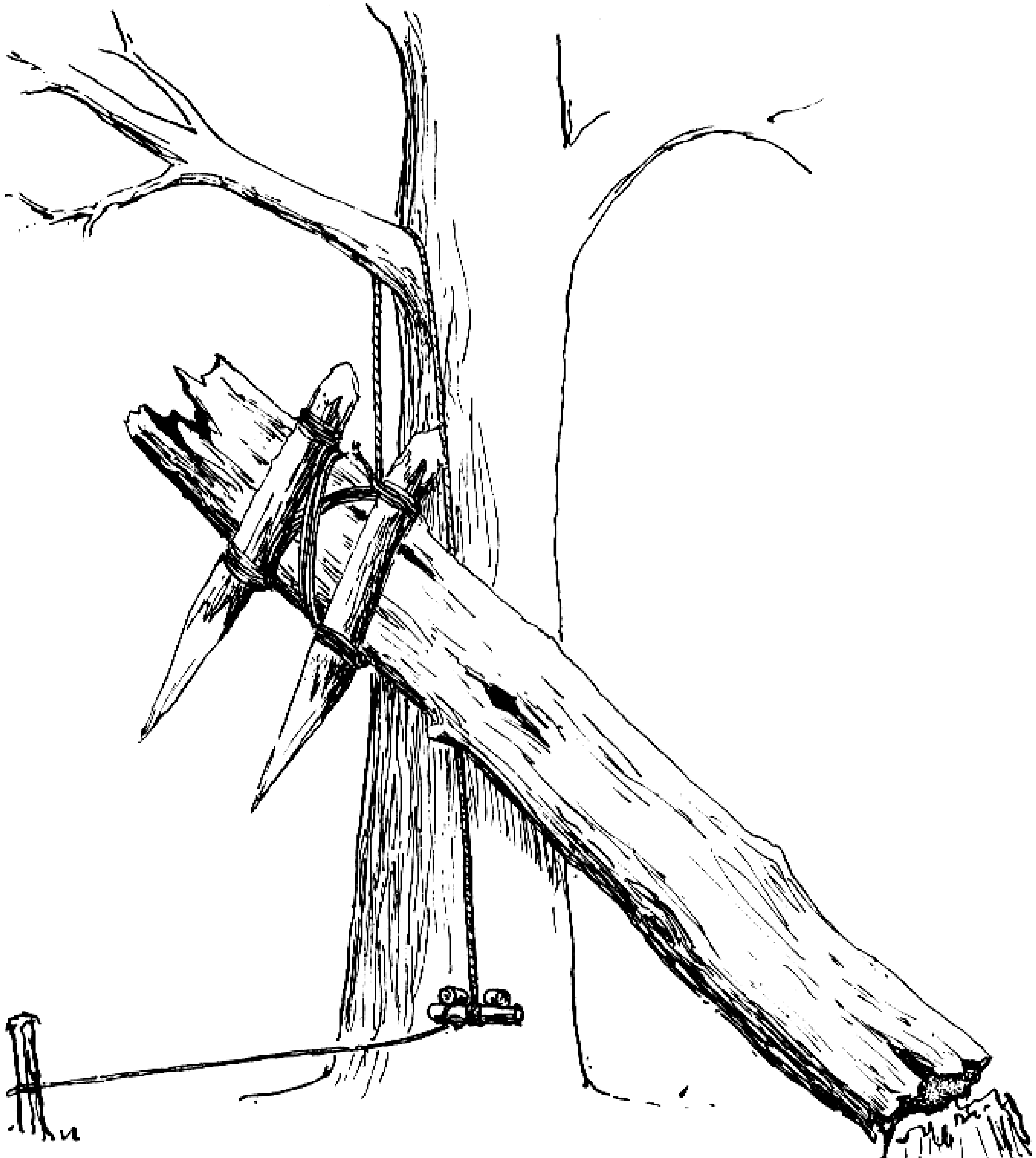
Suspended Snare

Double Pull–Up

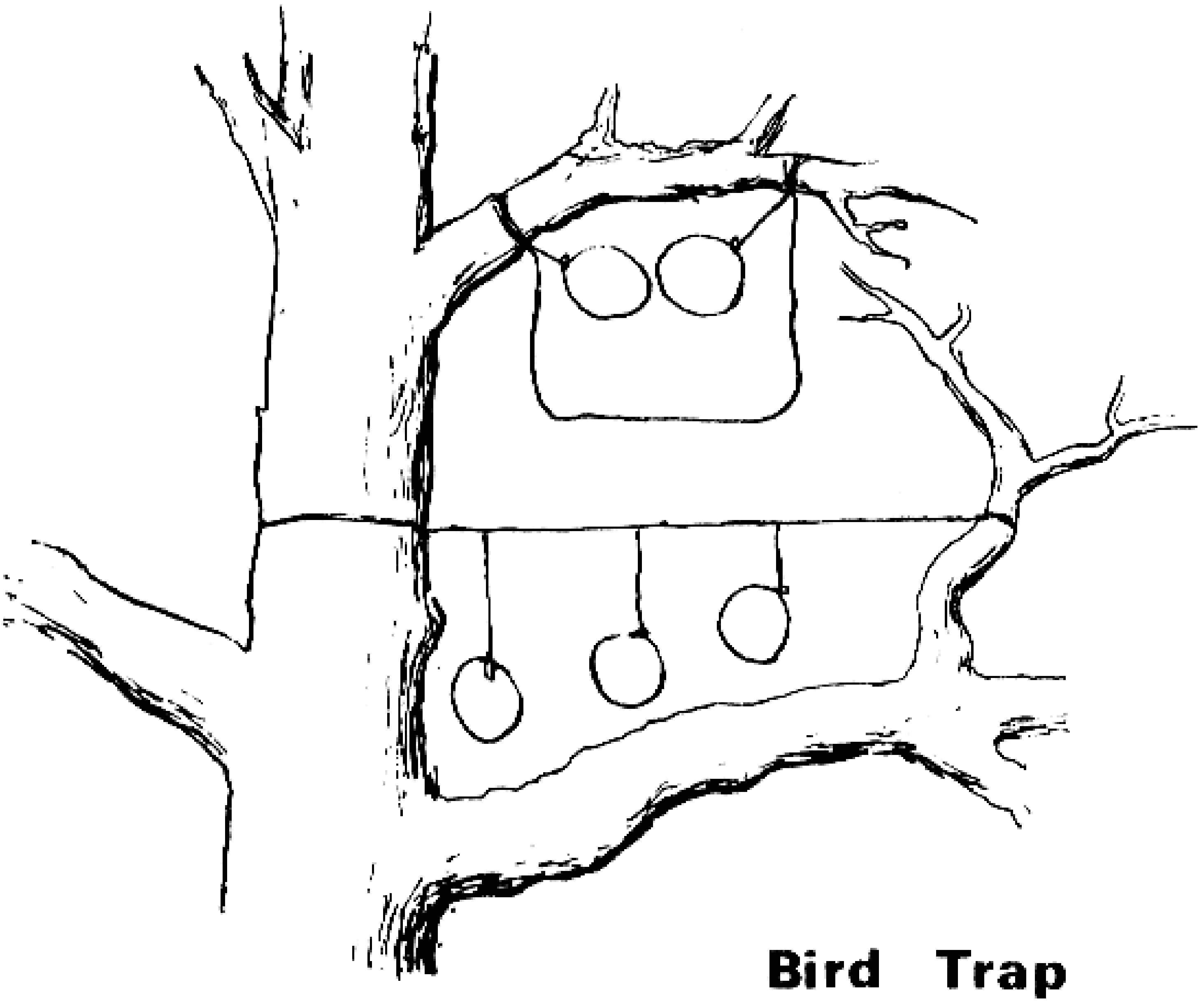


Dead Fall Snare

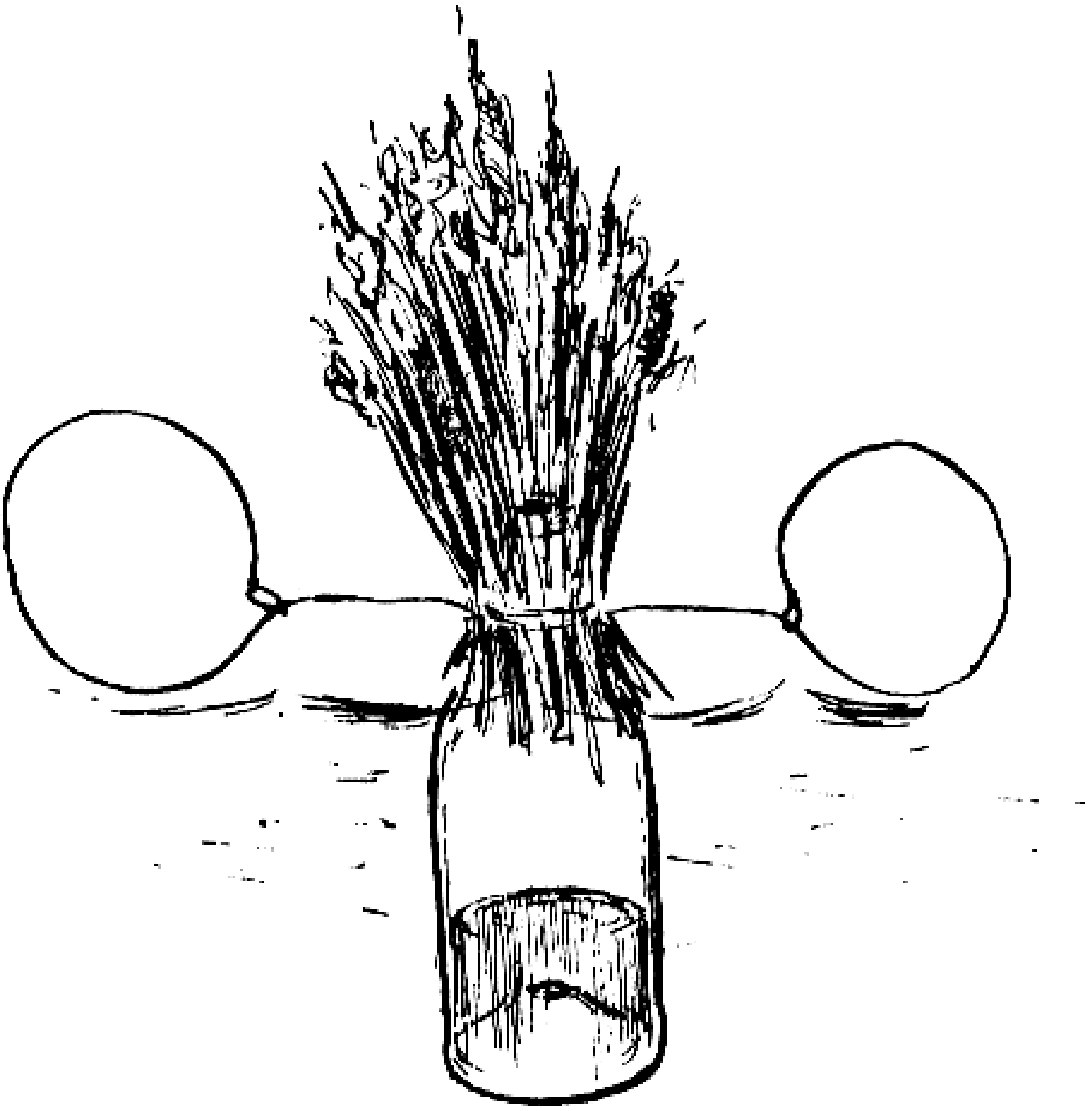




Dead Fall

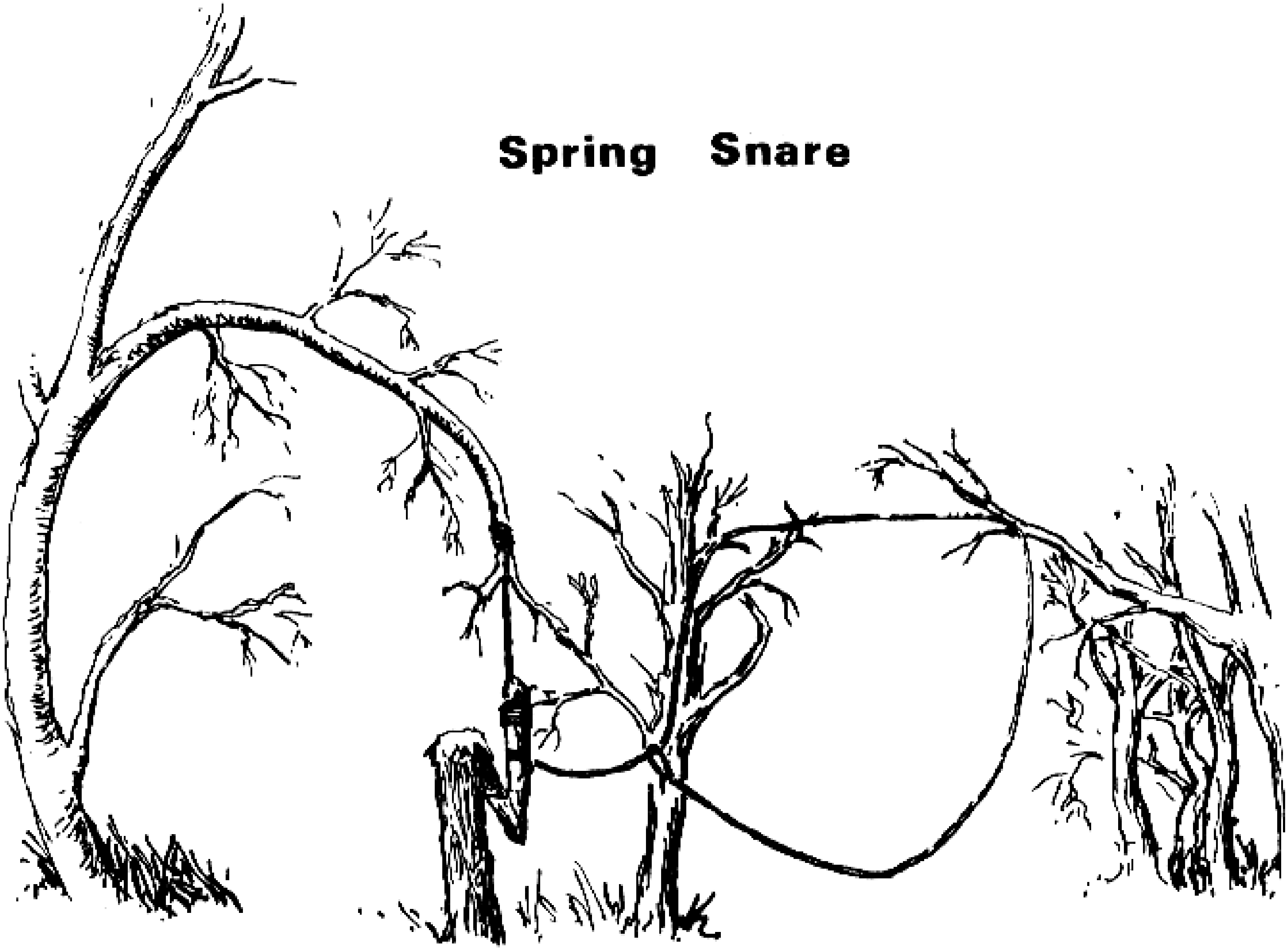


Bird Trap



Floating Duck Trap

Spring Snare



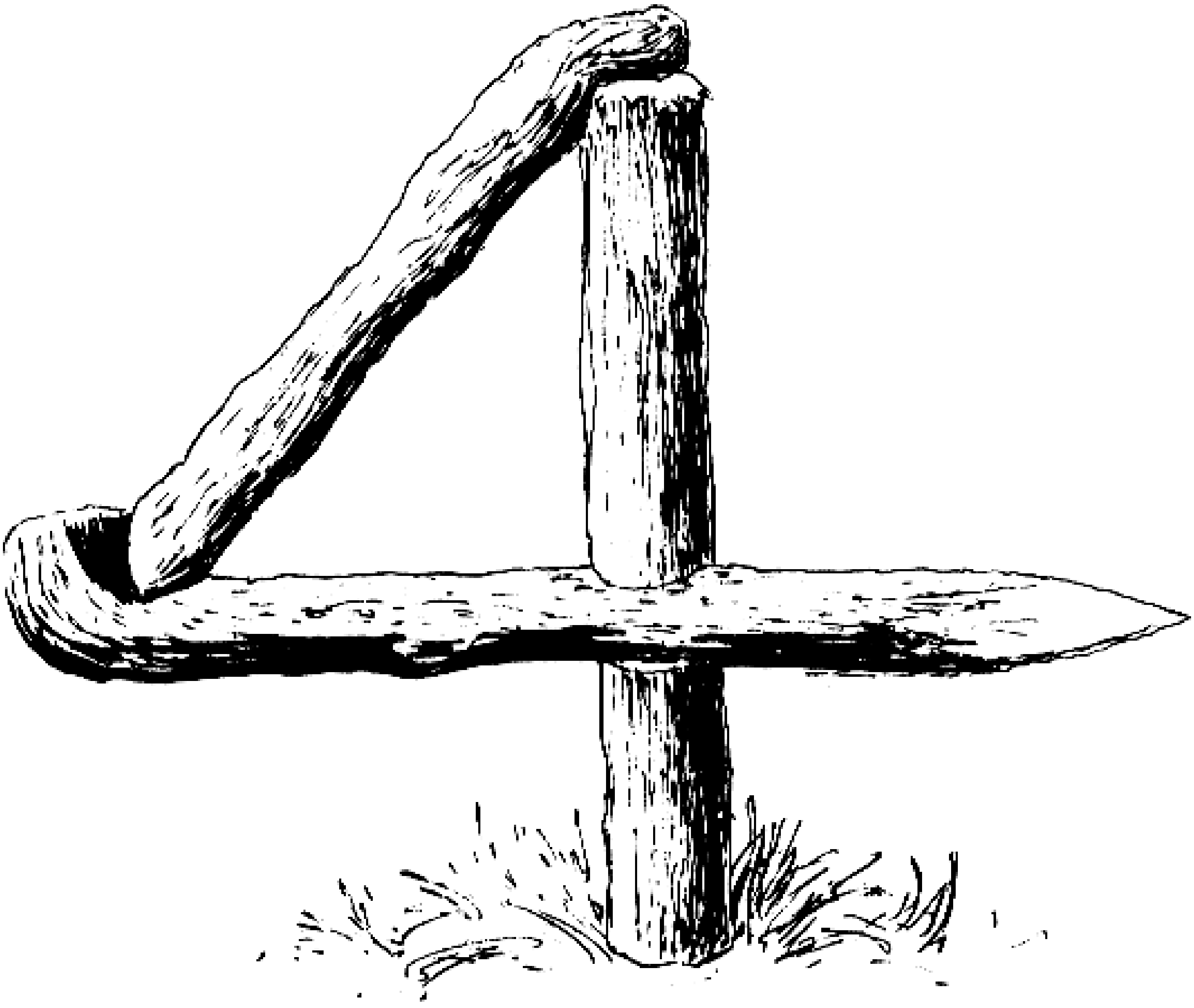
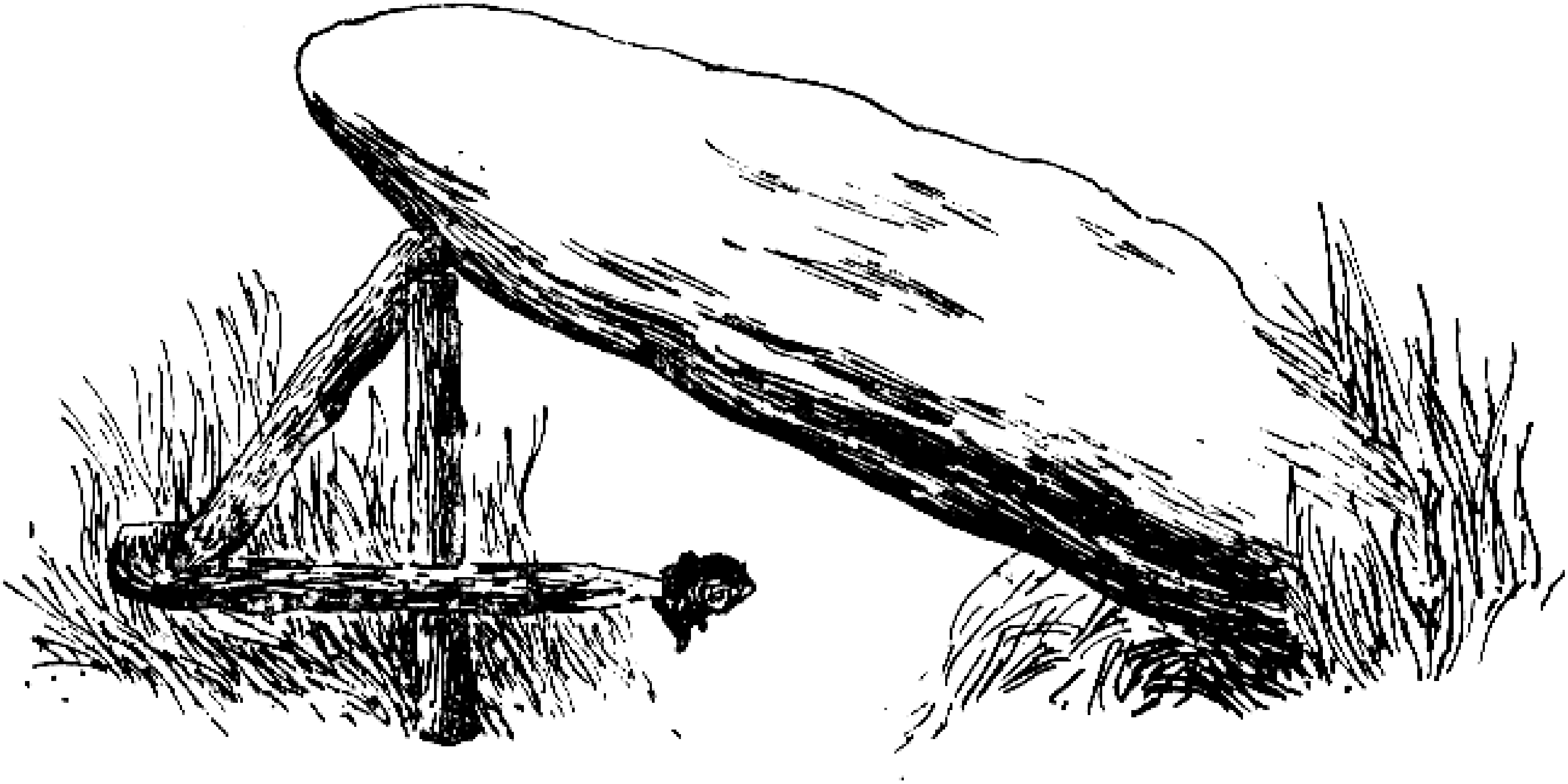
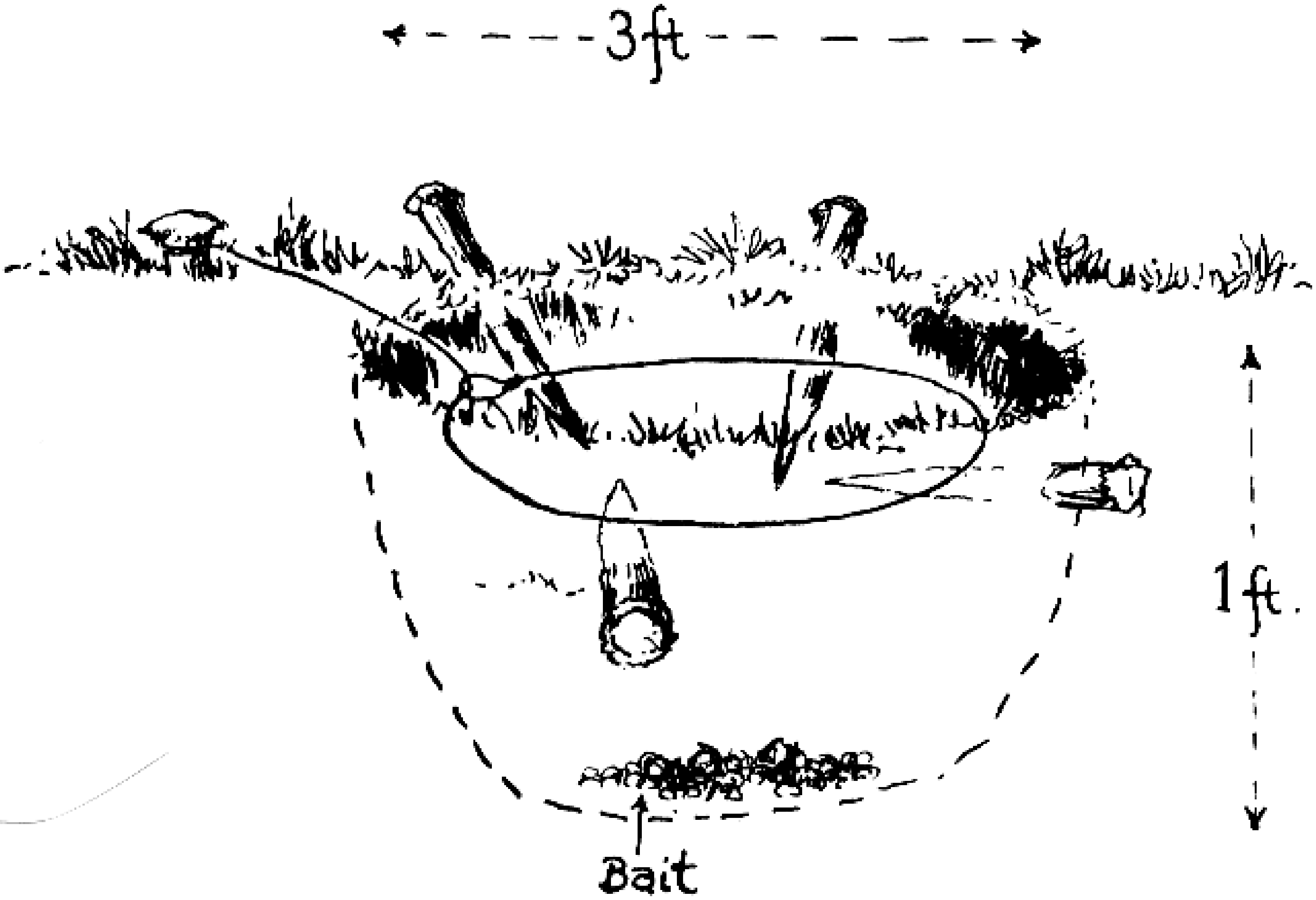


Figure Four

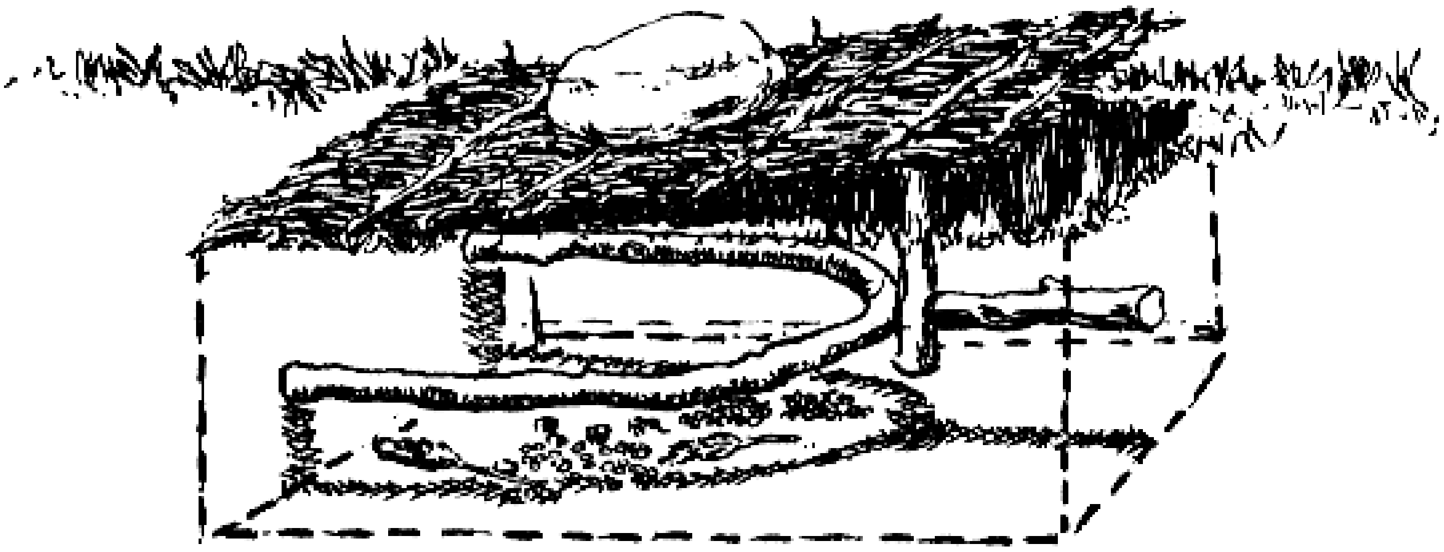
Fig. Four Deadfall

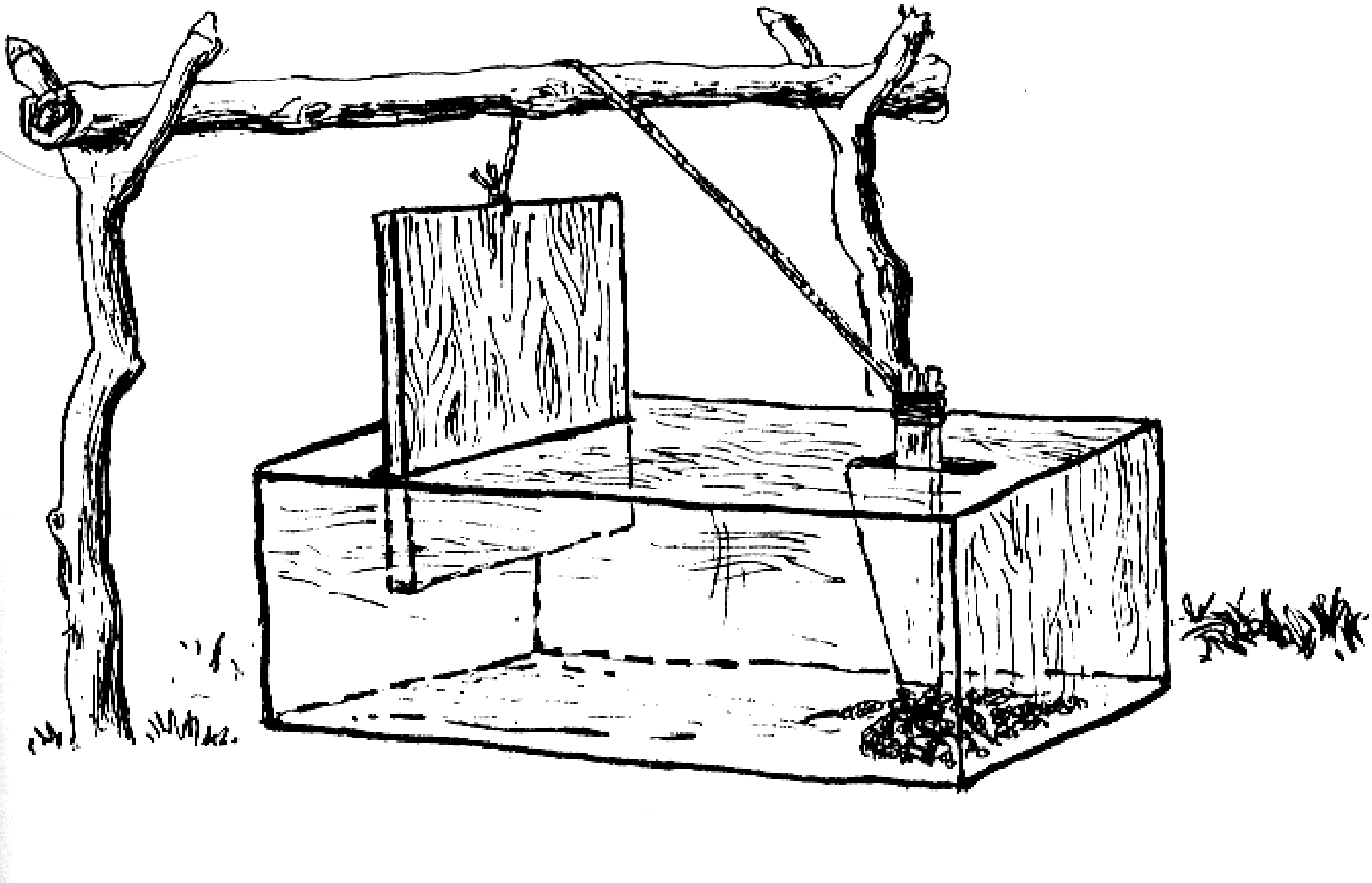




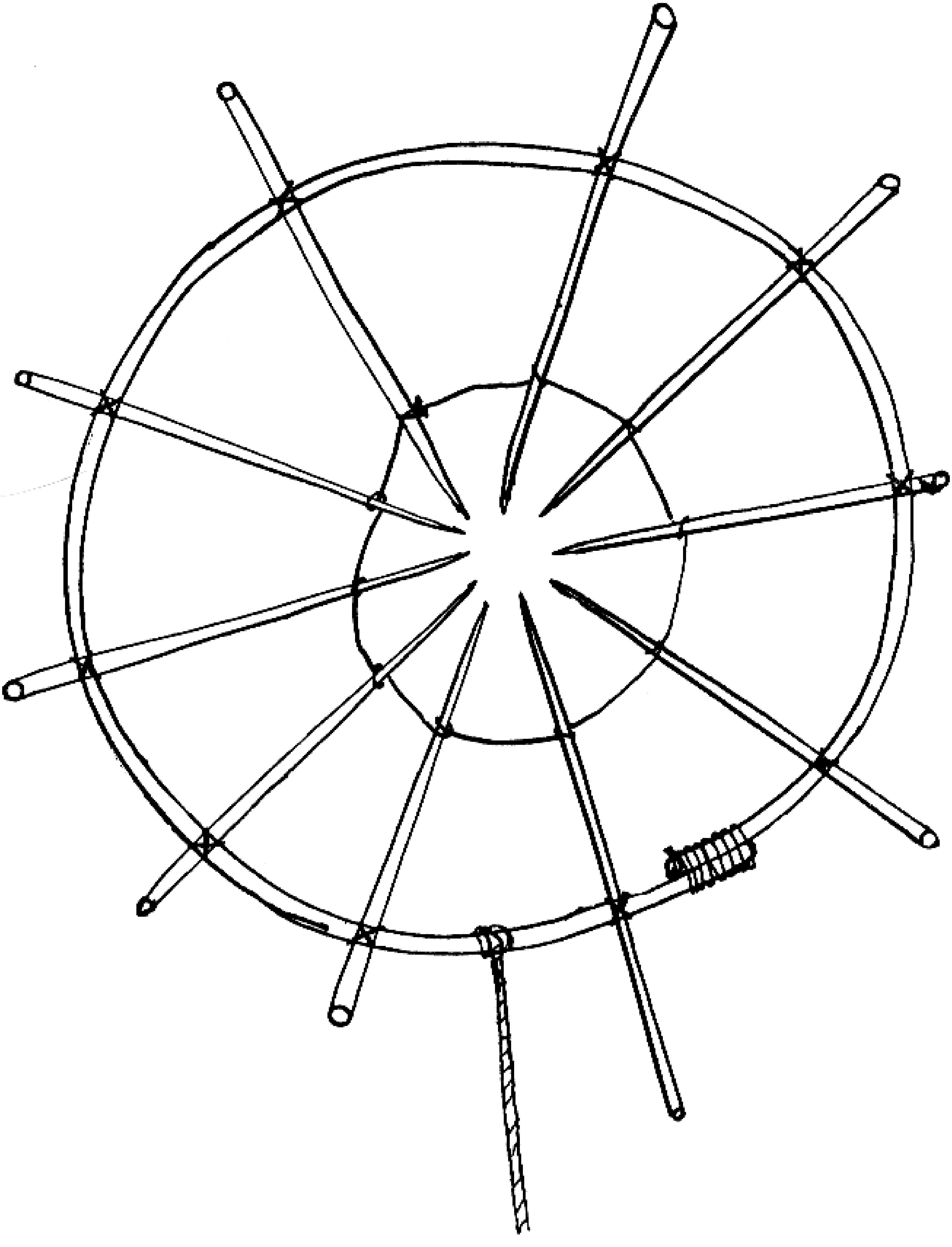
Baited Hole Noose

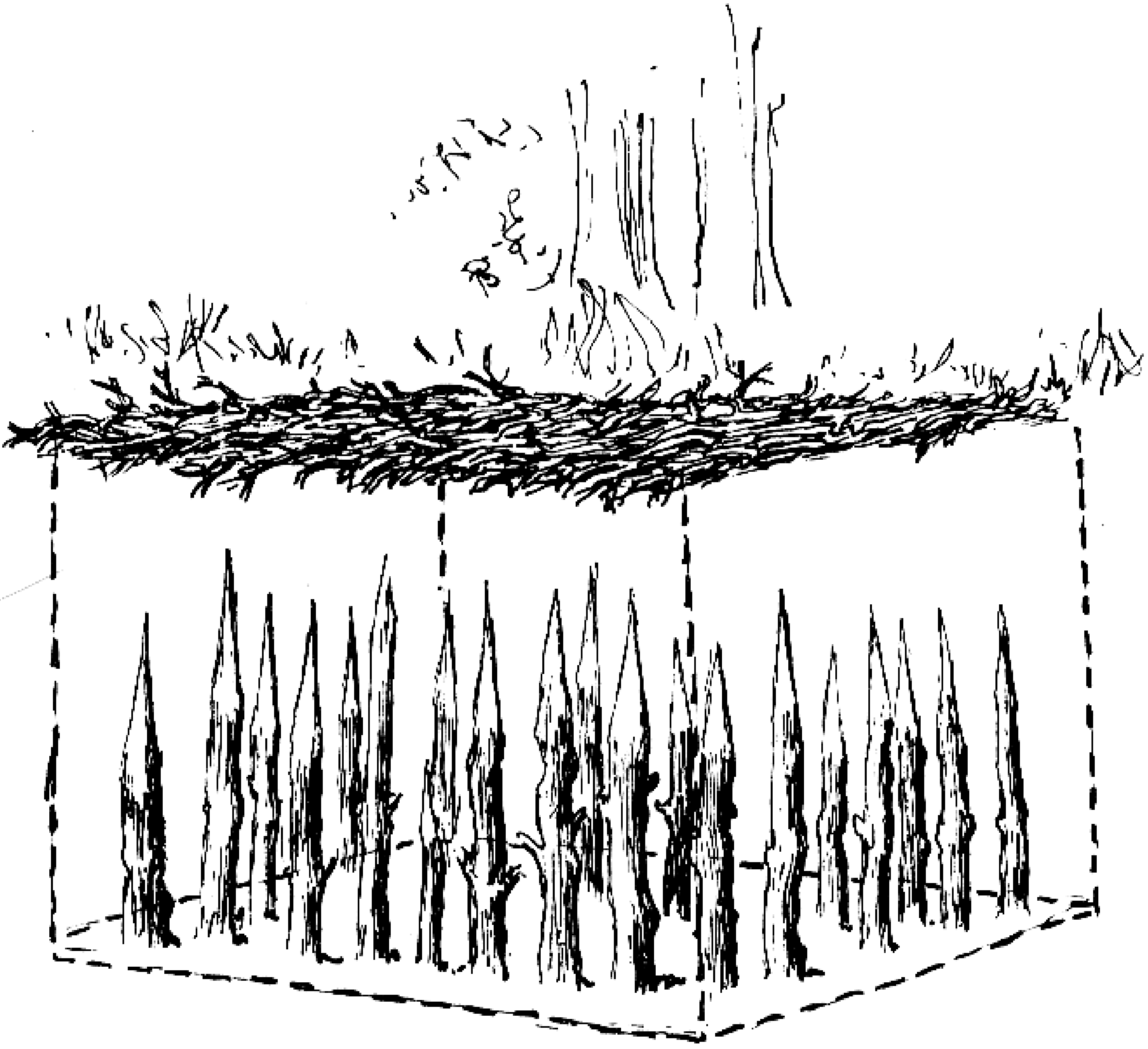
Bird Traps





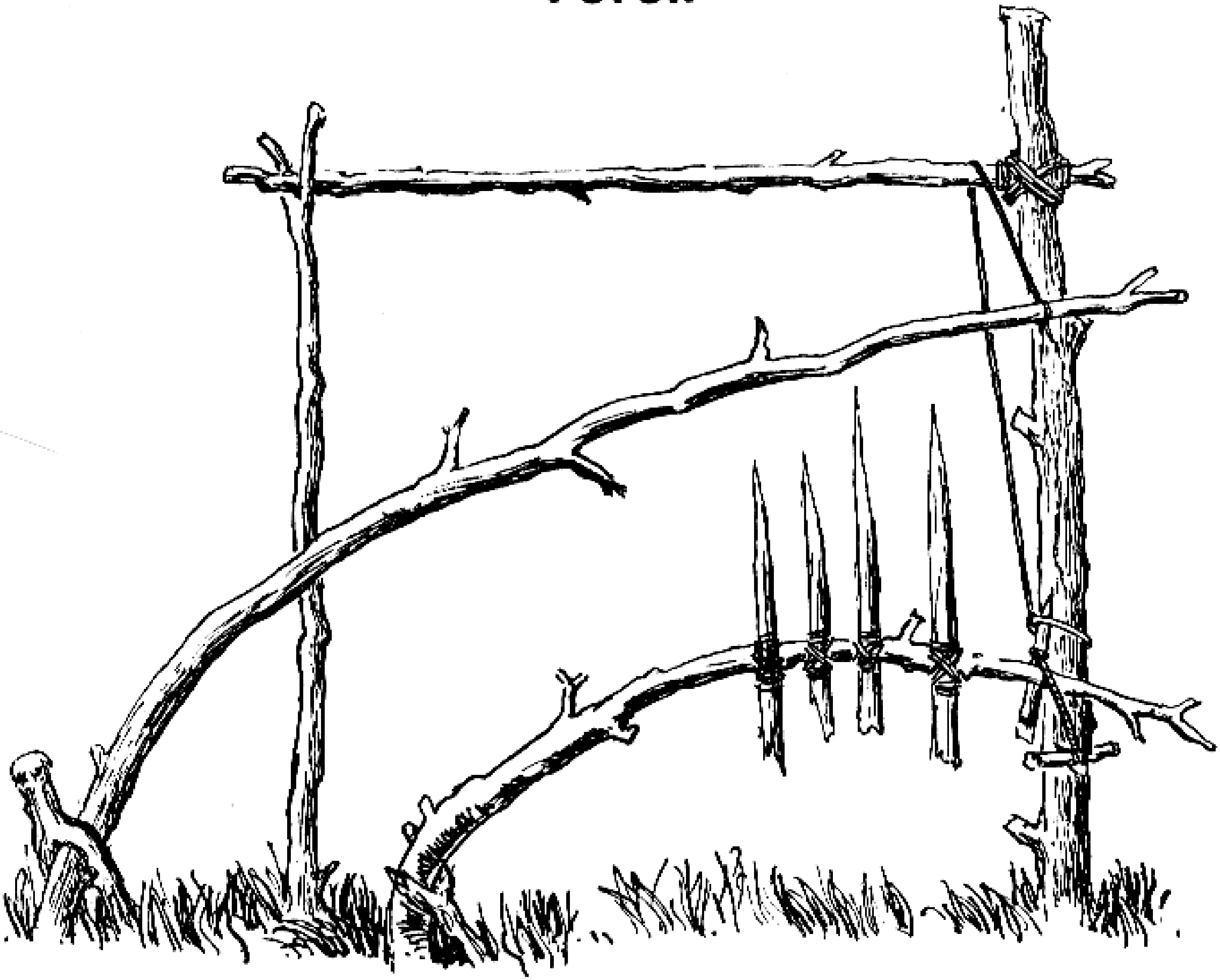
Animal Leg Trap



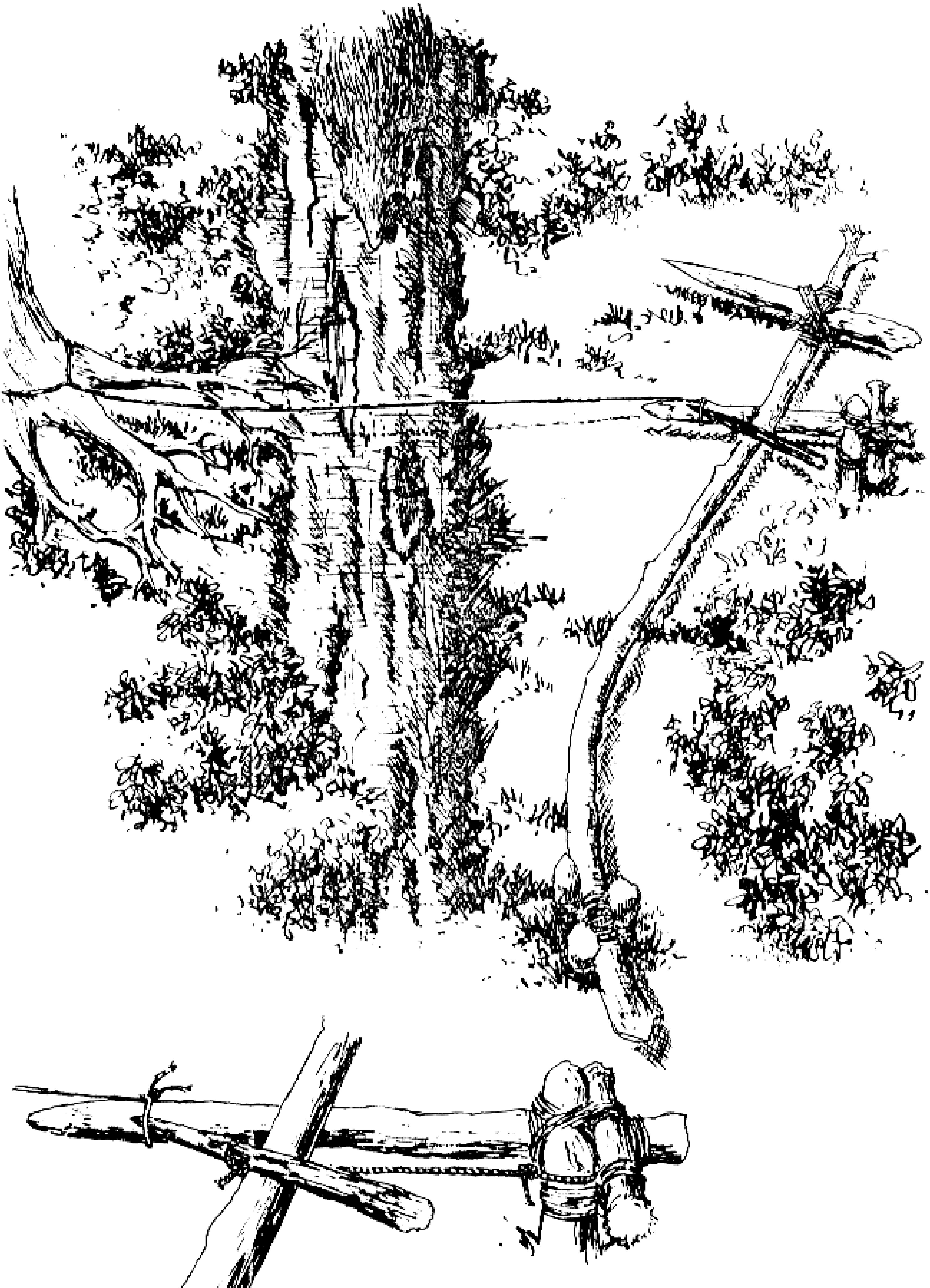


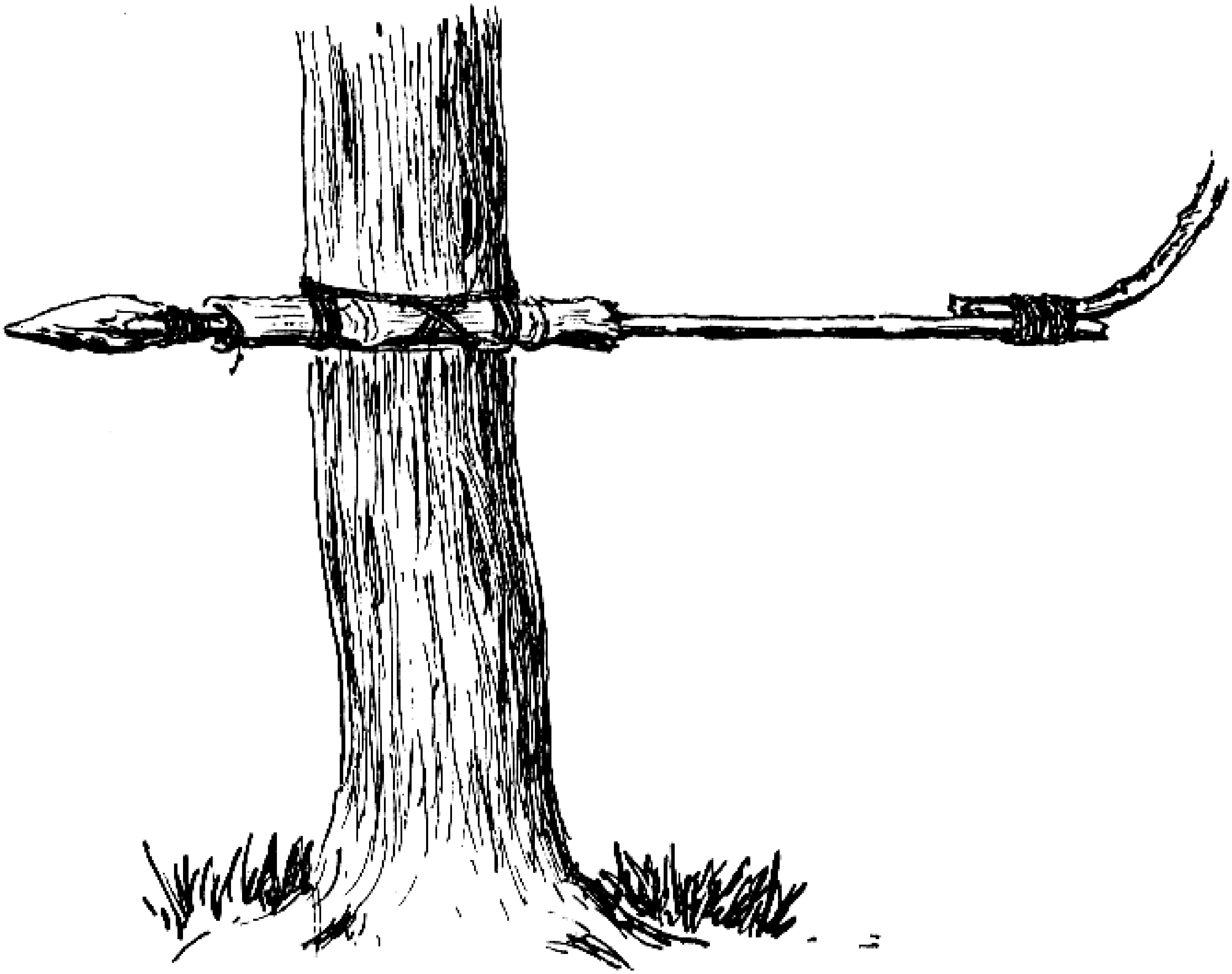
Spear Pit

Perch

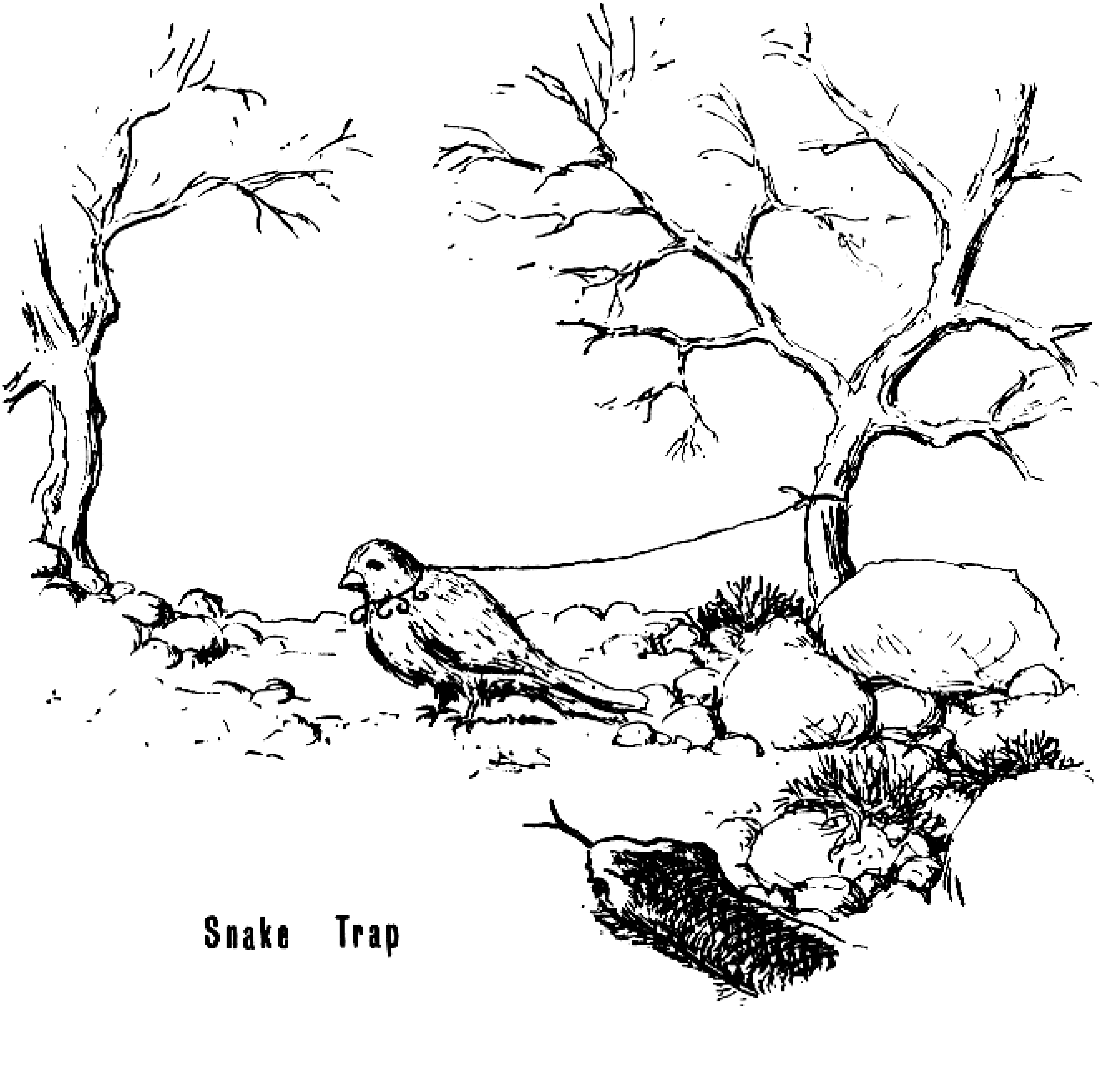


Simple Spear Trap



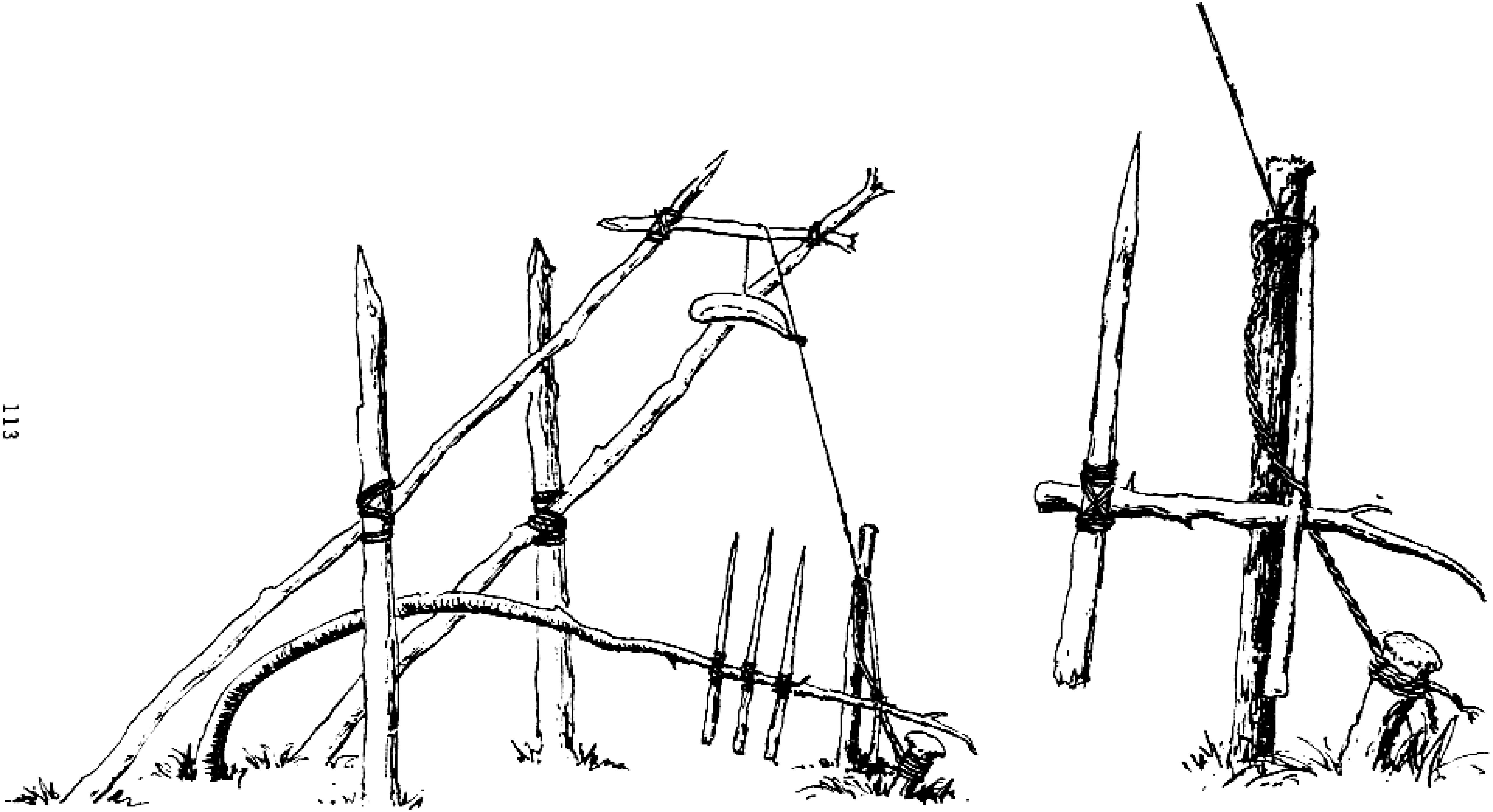


Bamboo Guide



Snake Trap

Monkey Trap (peti tagok)



PART 9

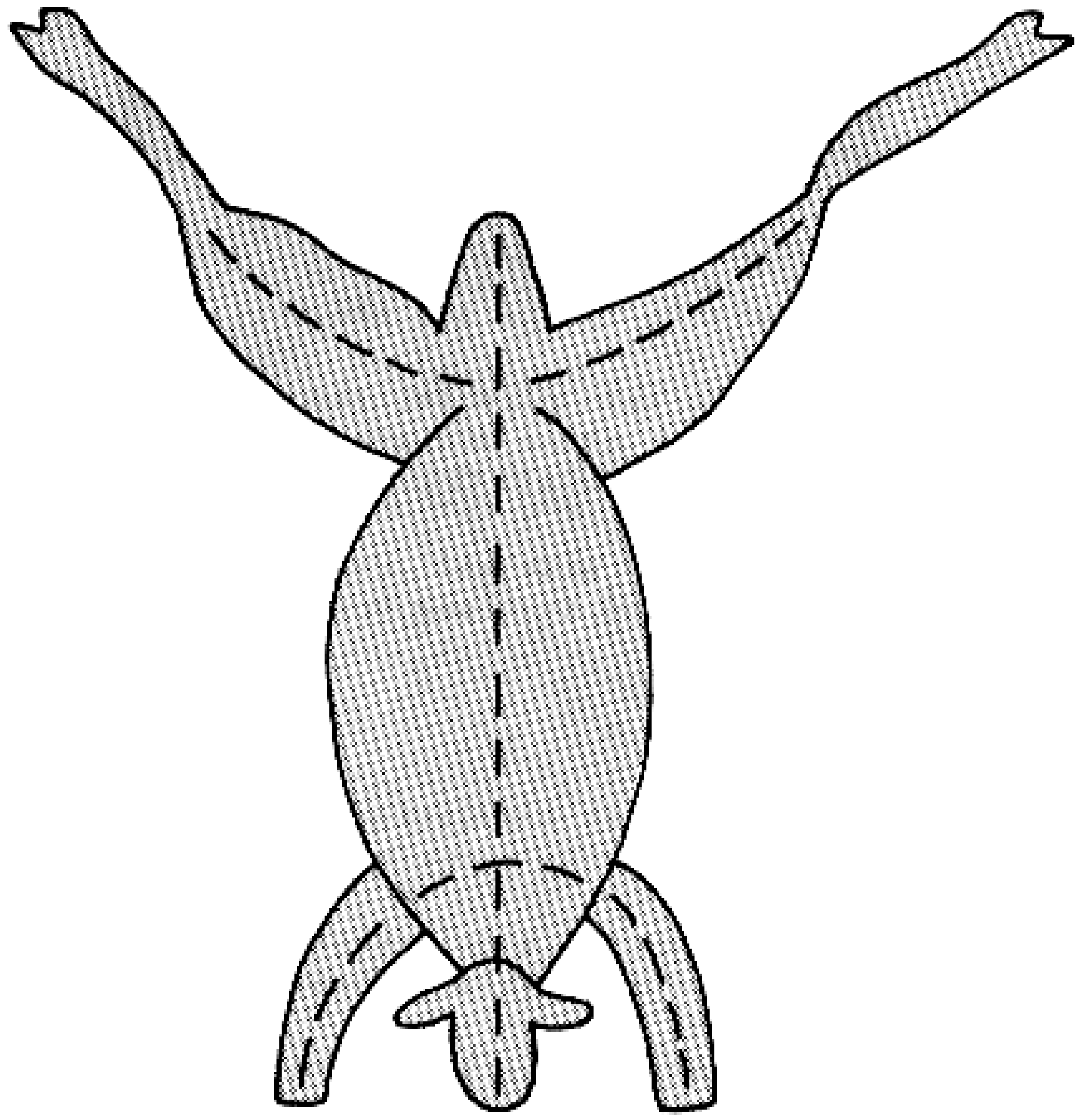
SKINNING

SKINNING

1. Hang the animal upside down, belly towards you, and allow to bleed in the normal way.

2. It is easier to skin an animal immediately after killing. If you are doing this it will be less messy if you skin it first and remove the entrails after you have skinned it.

3. Slit the skin from neck to belly, cut a circle round the crutch and rail and cut up the inside of the leg to the knee joint. Cut round the legs at the joint.

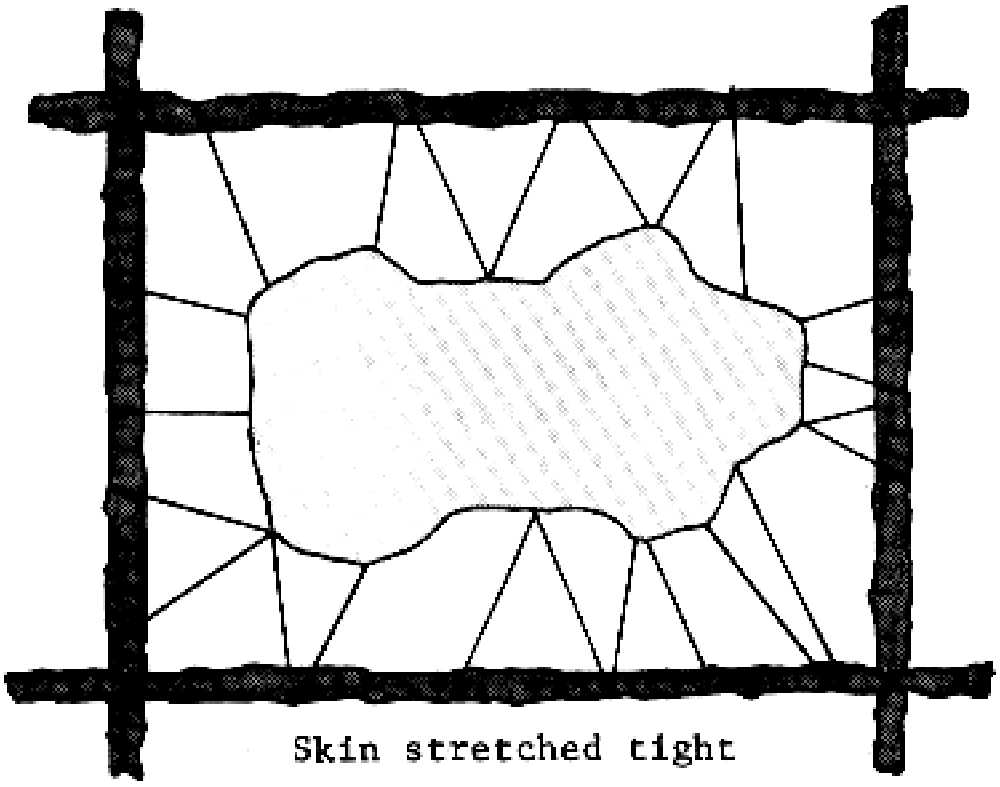


4. Beginning at the rear legs, which are uppermost, peel the skin away until you reach the back of the animal, removing downwards towards the head. Detach the skin by cutting round the neck.

5. *Rough Curing*

Wash the skin if possible to remove blood and fleas and scrape the inner side using sand or earth and a stone.

6. Using cord stretch the skin tightly on a frame and leave out in the sun, inside uppermost, for at least one day.



Skin stretched tight

The longer you can leave it in the sun the better.

7. To soften and to make the skin pliable, remove the frame, lay it over a fallen tree trunk, smooth stone, or on the ground and beat it thoroughly with a branch.

8. The amount of smell from the hide will depend upon how well you have scraped it in the first place, and how long you were able to leave it on the stretcher in the sun.

USE OF SKIN

9. A fur will provide first class insulation between your body and the ground and if you lay it hair side up snow will not stick to the skin.

10. It is not proposed in this precis to deal with the manufacture of improvised clothing and equipment. This is best practiced using hessian.

11. If it is snowing or raining fur is best worn on the outside, otherwise wear the fur nearest the body.

PART 10

FISHING

FISHING

INTRODUCTION

Fish are a very nutritious form of food and the effort required to catch them is well worthwhile. The following notes have been written as a guide to fishing and catching fish.

WHERE TO LOOK FOR FISH

All types of fish are attracted to shaded parts of streams, deep pools and backwaters. They also like to get under submerged rocks and logs, under banks and beneath low bridges.

If a stream, or river is in flood, choose a backwater where a small tributary enters the main stream.

If the weather is hot and the water low, fish the deep pools and shaded parts of the stream.

In cool spring weather, choose the shallow parts of the stream that are warmed by the sun.

CATCHING FISH

There are several methods in which fish can be caught depending on the country and the type of fish desired. Fish differ from each other in their diets and habits just as animals do. Some fish, such as Trout will kill and eat a small Trout; these cannibal Trout can be caught with a spinner, minnow or live bait.

Catfish or Carp live and feed on the mud at the bottom of slow, muddy rivers and ponds. Catfish can be caught on a hook baited with a small piece of another fish.

Eels are also a bottom feeding fish and can be fished for on the bottom. They are attracted by rotten meat.

Pike are the scavengers of the water. They will kill and eat anything from small fish and frogs to a young duck.

BAIT

If using a hook, try to find out what the fish in the area are feeding on. This will depend on the time of the year, the state of the river and of course type of fish. Some of the usually successful baits are insects, worms, meat shell fish, woodgrubs, minnows, wasp maggots, pigs liver, eggs and scraps of flesh.

If not successful with one bait, keep changing them until a fish is caught. Then cut the fish open and try to identify what food it has been eating. Having found out use that particular type of food as bait.

Live bait can be used to attract fish; insects small fish are good in this respect, but small worms tend to die too quickly after being put on the hook. When using live bait, try catching a grasshopper, or beetle and then tossing it on to the surface of the water. When it lands on the water it will start kicking and attracting good fish. If it is taken by a fish, catch another grasshopper. Carefully place a small hook in the joint at the back of its neck, making sure not to kill the grasshopper then without any weights

on the line, toss the grasshopper as far out onto the water as possible and walk downstream with the line until the fish takes the bait.

Another way of live bait fishing is to catch a small fish about one to two inches long. Place your hook into the meaty part of the back, or tail without killing it. Then, with the aid of a float of some kind, to keep the live bait off the bottom, toe the line into the pond, pool or river. The float will give warning when the bait is taken, but remember not to strike as soon as the float goes under because in most cases the big fish will grab the small one by the tail and will then have to have time to turn it round and swallow the bait head first.

HOOKS

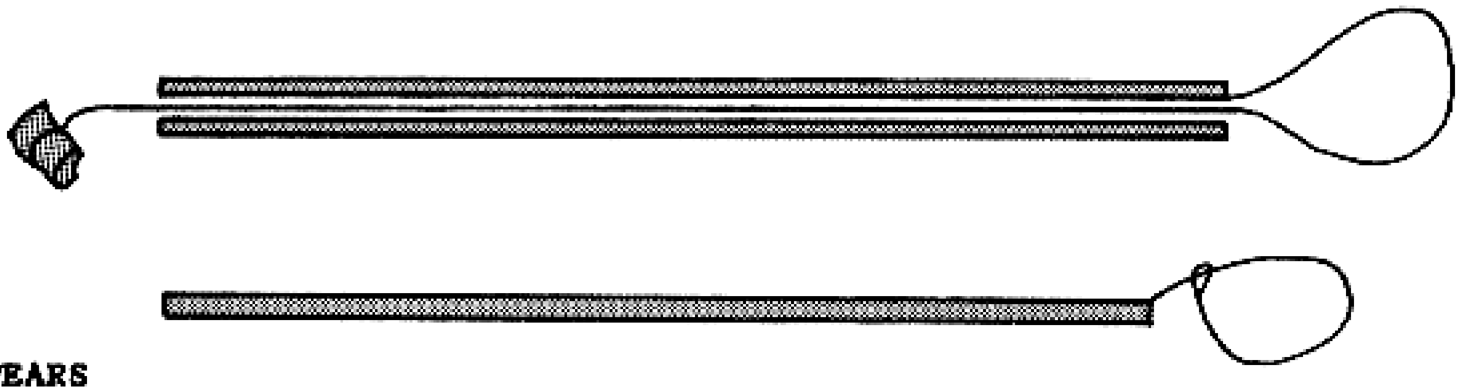
Do remember that when making, or buying fishing hooks that small hooks will catch large fish as well as small fish. But large hooks will only catch large fish.

SPEARING FISH

This is a good method of catching fish. One of the best ways is at night, using a torch, or light of some sort. The light attracts the fish and they are then easy to spear.

A variation of this method is to lay a flat piece of shining metal or a mirror, on the bed of the river on a moonlight night. This will glint, like a light, and attract the fish. As they come to the mirror and pass over the top of it they are easy targets to spear.

A good method of spearing fish in daylight is to find a rocky portion of a river. Then get another person to slowly lift rocks from the downstream end. As the water clears any fish that are there can be seen and speared.



FISH SPEARS

These need to be made very strong. They should not bend. The point of the spear must be very sharp: a blunt spear will merely be reflected off the scales of a big fish. The three pronged spear is best.

Do not throw the spear, a thrust is more effective. Try to get on top of the fish and if in shallow water, pin it down to the river bed. In this way barbs will not be necessary.

There are two ways of snaring fish, one is to have a noose made from a single strand of thin wire which is then attached to a long pole. Fish, such as Pike, lie alongside weeds. Bring the noose from the back over its tail and move it slowly up to behind its gills. Then, with a quick snatch, lift the fish onto the bank.

The second way of snaring fish is to use a hollow pole, such as a bamboo. Pass the length of this wire through the centre of the tube. Attach the wire to the pole at the top end, leaving enough wire at the top end to make a loop or noose. At the other end of the pole, make a hand grip on the wire from a

small piece of wood. This type of snare is useful, because with it, any size of fish can be caught.

EEL TRAPS

Eels make very good eating and are not very hard to catch. They are found in most parts of the world, in the sea as well as in rivers, ponds, lakes and canals. They have been known to cross land to get from a river to a pond to breed and in such cases can be easily hit with a stick and picked up.

Eels do not bite. They are however covered in a slippery slime, which makes them almost impossible to pick up and lift out of the water.

When fishing for eels with hook and line do not strike when first the Eel is felt taking the bait; wait for the bait to be swallowed.

NIGHT LINES

This is a very simple method of catching fish and eels which is frequently used by Freshwater fishermen. It is most successful and requires the minimum of effort. The line need not be checked and can be left for a number of days. A Night Line is simple to make from a survival kit. The only point to note is that the hooks must be baited with a strong bait, such as a small fish, or a piece of meat that can be tied on the hooks. Bait, such as worms, would be sneaked off the hooks by Eels, without catching them.

BOX TRAPS

This is another good way of catching Eels. The box should have a few small holes in the sides near the top and the box should be baited with a lump of smelly meat. The weighted box can be left in the water for up to a week without being checked.

TICKLING TROUT

Trout are the only fish that can be tickled with success and it is one of the best ways of catching them. They are a very nervous and alert fish and will only be found in clear running water. As a result they hide in the following places:

a. Under the banks of rivers and streams.

b. In rat holes in the banks of streams and rivers.

c. Under rocks.

d. In the foundations of stone bridges.

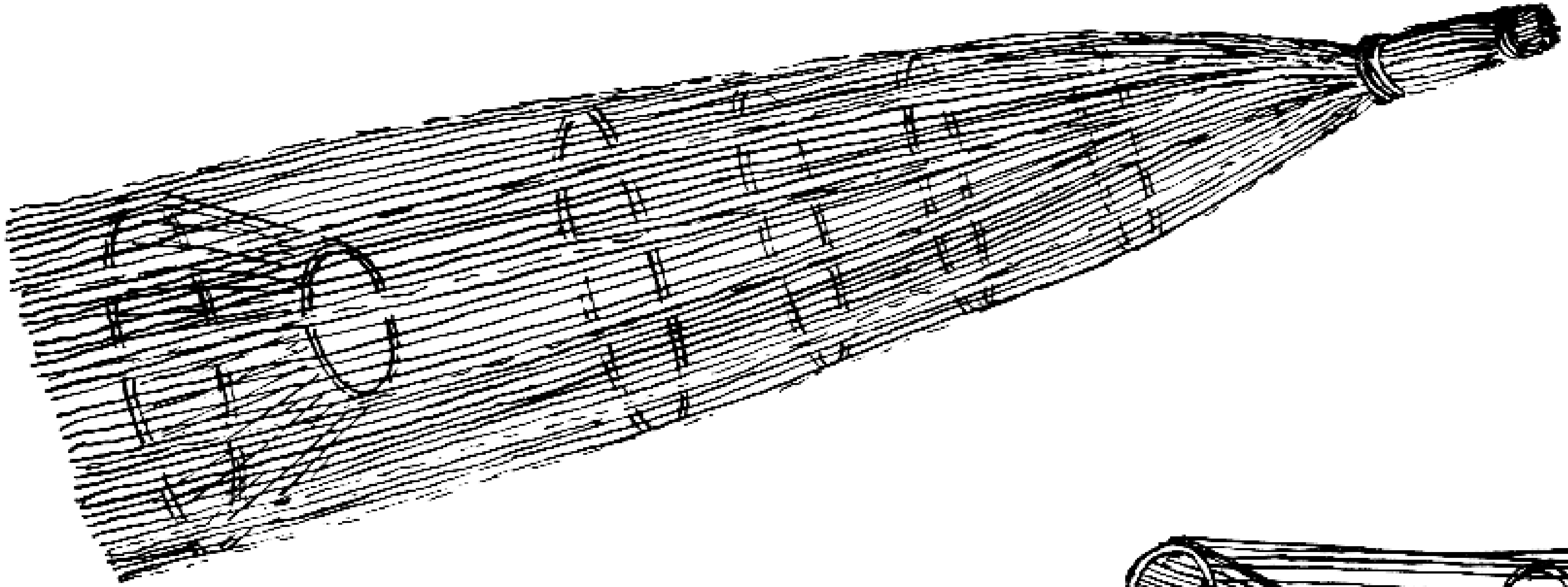
These are the places where Trout can be found and tickled. It is impossible to get near a Trout lying in open water, let alone tickle it there.

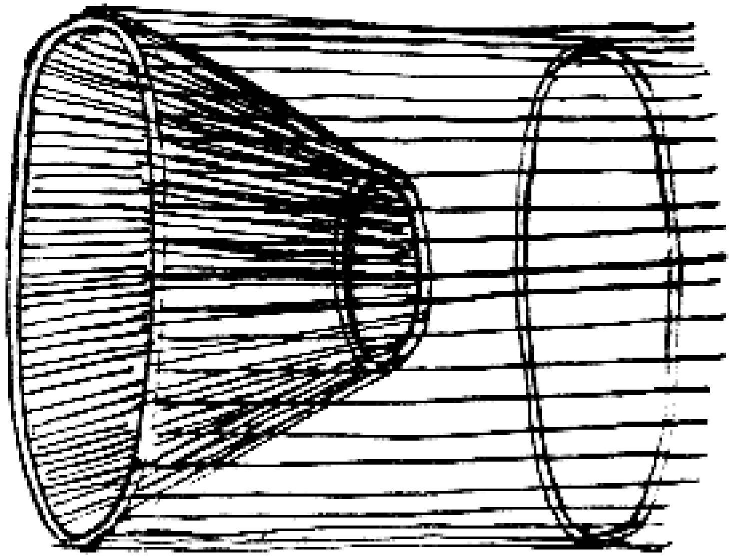
When approaching the bank of a river or stream that looks a likely spot, there is no need for caution. Lie on the bank, start at the dowstream end of the eddy and with hands together slowly move them along under the bank. By starting on the dowstream end, the fish's tail should be felt first. Stroke it gently a few times, then still stroking it gently, work towards its gills. When the gills are reached, grasp the fish quickly and toss it onto the bank.

In rat holes it is possible to find two, or three Trout all in one hole. In such a case, do not bother tickling them, as they cannot escape. Therefore kill them by squeezing their gills, before removing the hand from the rat hole.

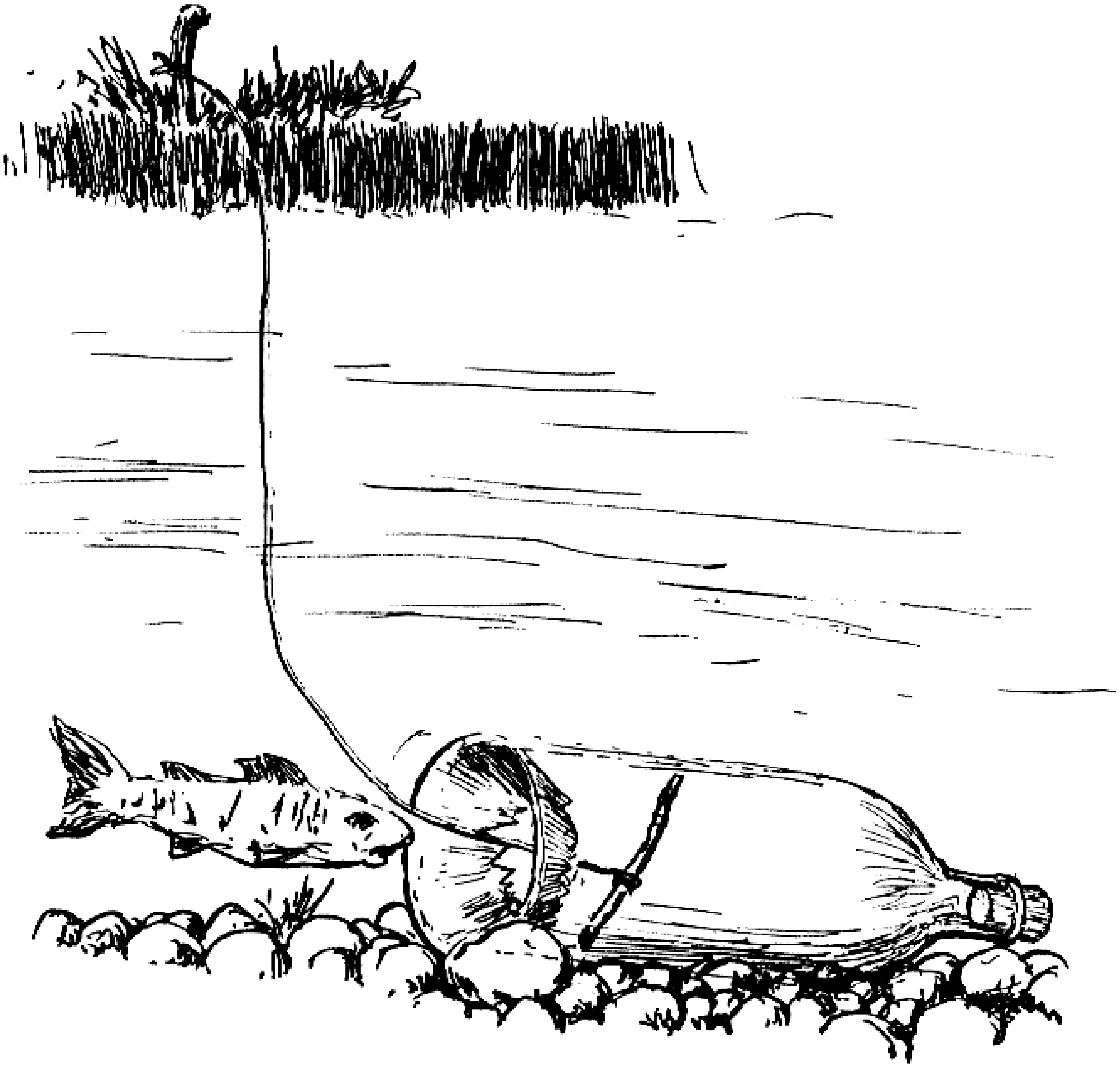
When first learning to tickle trout people tend to be nervous. When they first touch a fish, they jump and startle the fish which is then scared off. There is no need for this nervousness, there is nothing harmful in British water.

To tickle trout with success a little determination is needed. Once this is realised trout tickling is quite a simple and profitable art.



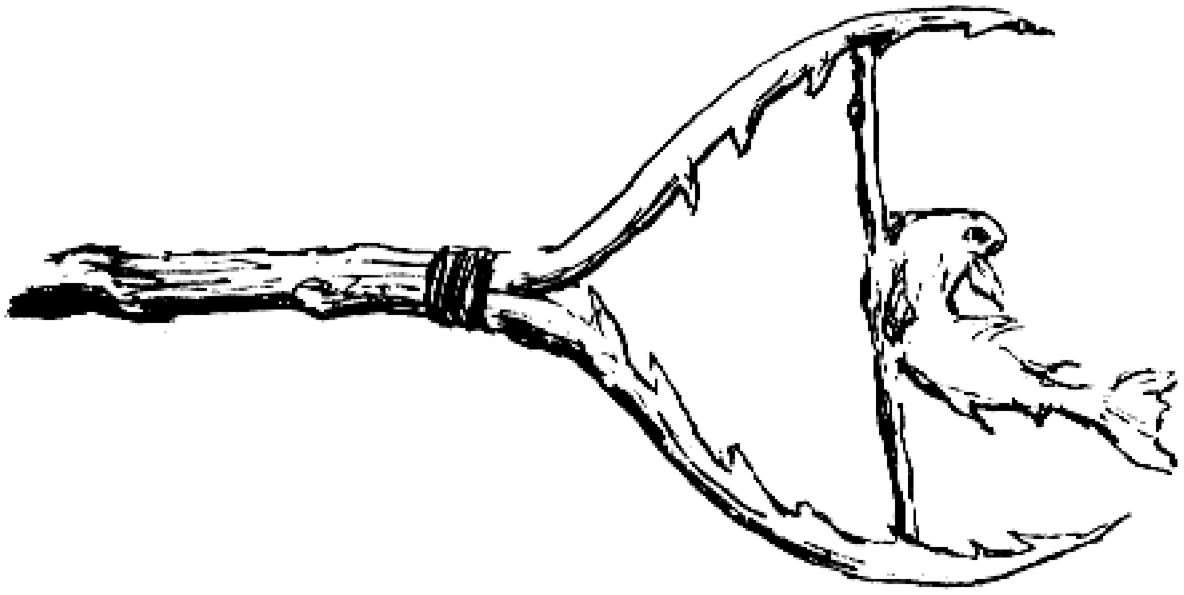


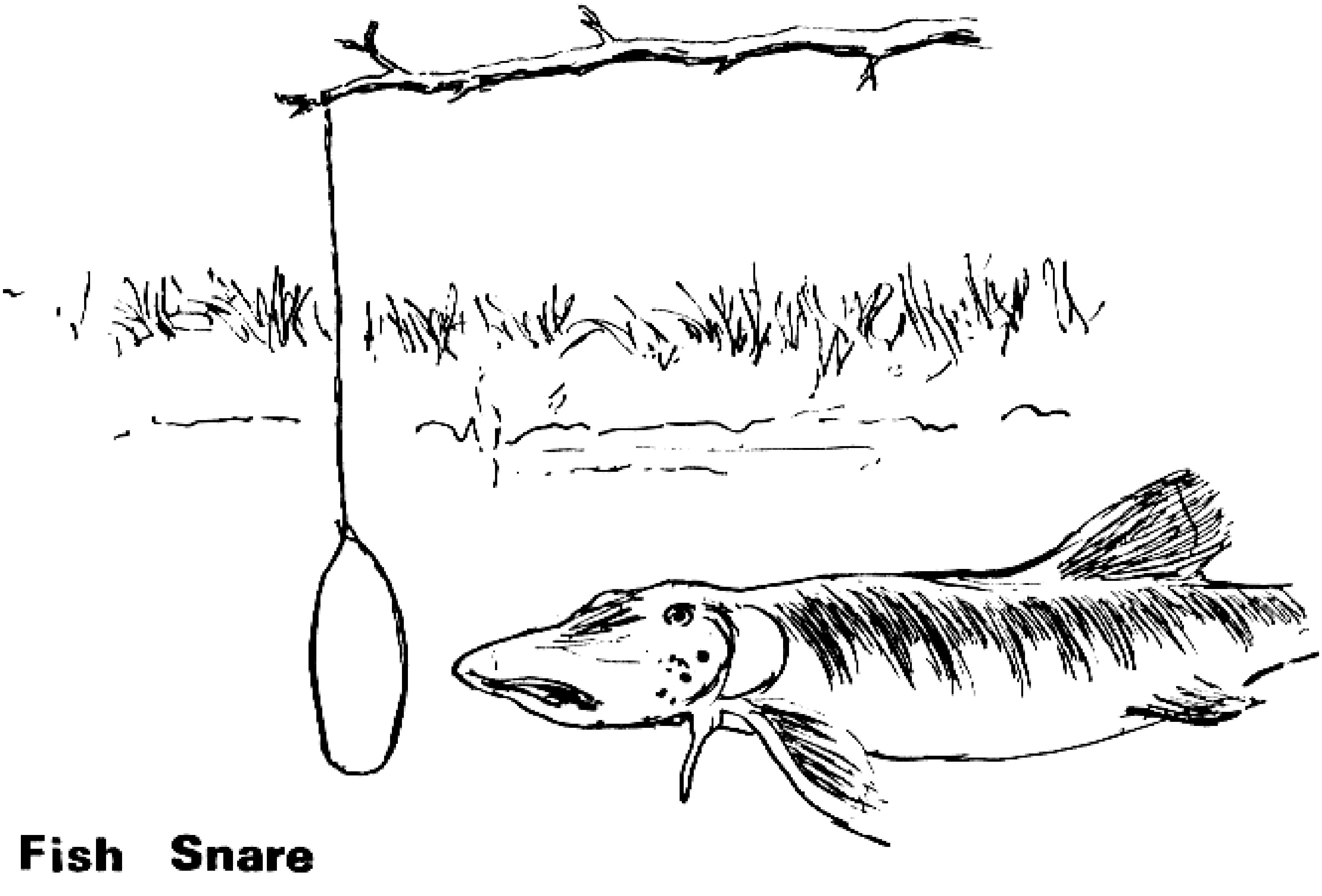
Fish Trap



Bait Trap

Fish Trap





Fish Snare

PART 11

WATER SURVIVAL STILL

WATER - SURVIVAL STILL

(This is an extract from "Outdoor Life" - August 1965)

Several days without water would finish off even the hardiest outdoor man, but the ground under him - even in deserts - usually contains more water than he needs to stay alive. The problem has been to extract the water from the ground and make it available for drinking.

Now, two scientists have found a way to milk water from the desert with materials which is simple to erect and costs less than a pound. Their "survival still" consists of a six-foot square sheet of clear plastic and a children's plastic bucket to collect the water. A long plastic tube through which to drink the water is optional.

This remarkable survival gear was developed by two research physicists, Dr. Ray D. Jackson and Dr. Cornelius H.M. Van Bavel of the United States Water Conservation Laboratory near Temp, Arizona. Dr. Jackson became interested in the survival idea while conducting field tests on a conventional solar still. If the heat of the sun could evaporate salty or brackish water and make it drinkable, could it not do the same for water that Jackson knew was in the ground? His first collector was like a box with a sloping plastic cover, but Dr. Van Bavel thought of an even simpler idea.

"Why not", he said "just scoop a hole in the ground, cover it with plastic and put a rock in the centre in the form of a cone?".

Since then, the two men have set up a number of stills which have produced water in useful quantities. Some locations yield more water than others. A site above underlying rock, for instance, may soon run out of moisture. A natural depression or a dry riverbed are best. But even the most unlikely location - unless it's a paved parking lot - will produce some water. The lowest yield the stills have produced is a little less than a pint a day. A still in good soil has produced about a quart a day for more than a month.

There is a gradual decrease in output, but when one spot peters out, the still can be moved to a new site.

The solar still is operated by the sun's heat raising the temperature of the air and soil under the plastic, thus hastening vaporisation of the water in the soil. When the air under the plastic becomes saturated - able to hold no more water vapour - the vapour condenses in tiny drops on the undersurface of the plastic - the plastic being cooler than the damp air under it. The drops run slowly down the sloping underside of the plastic and drip off into the bucket. This on a small scale, is what happens in nature when saturated air is cooled at high altitude and condenses into raindrops.

Because solar energy provides the heat for the still, it might seem that darkness would halt production. After sundown, however, the plastic cools rapidly, while the temperature of the soil remains high. So water vapour continues to condense on the undersurface of the plastic.

After developing their own technique, Jackson and van Bavel learned of similar work in Japan.

An Engineer named Kobayashi set up a box-like collector made of metal and glass in Tokyo and collected about a quart of water a day per square yard of surface. On the volcanic island of Oshima, he scraped away a few inches of surface ash and set up his collectors. They produced as much water there as

they had in Tokyo. Eventually Kobayashi went to the Quetta Desert in Pakistan. The glass top of his collector got so hot he couldn't touch it, and no water was produced during the day. But at night, the collector produced almost a pint.

The basic material for setting up your own survival still are a 6ft x 6ft sheet of clear plastic, a bucket (two to four-quart capacity), and about 5ft of flexible plastic tubing. You can do it without the plastic tubing, but it allows you to drink water without removing the bucket from the hole.

The survival stills in the accompanying photographs use Tedlar plastic and 'adherable' material made by du Pont and marketed as No. 100 BG-20. Because the plastic is slightly roughened, drops of water cling to it better than they do to ordinary plastic. Thus water sticks to the plastic right down to the bottom and drops into the bucket, not onto the ground.

It is possible to roughen the surface of other plastics with very fine sand paper and lots of care. In a pinch, any clear plastic will work to some extent. Any container might be substituted for the bucket, although the wider the mouth, the more water it will catch.

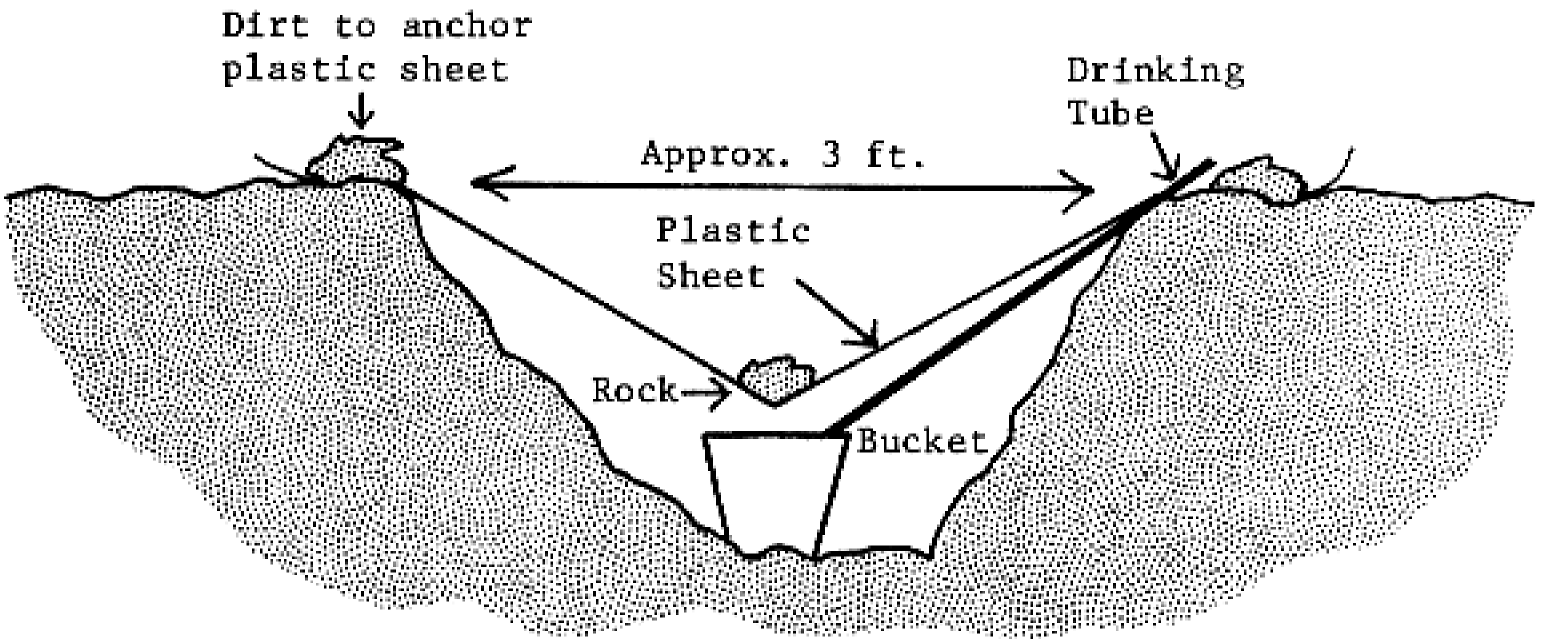
The hole for the still should be dug in an uhshaded spot. It should be round and about three feet across. Maintain this diameter for a few inches down, and then slope the hole inwards, as shown in the diagram. The hole should be deep enough so that the point of the plastic cone is about 18 inches below ground and clear of the top of the bucket.

Put the bucket at the bottom of the hole with the drinking tube taped inside it. Run the other end of the tube free, lay the plastic sheet over the hole and pile enough dirt around the edge to hold it securely. Use a fist-size rock to weigh down the centre of the plastic, about two inches above the top of the bucket.

Ideally, there should be two or three inches of air space between the plastic cone and the earth, but this distance is not critical. Just make sure the plastic does not touch the earth anywhere and thus waste water. Don't let the plastic touch the bucket, either, or the water might run down the outside of the bucket.

Vapour should soon cloud the underside of the plastic, and drops should begin to trickle down towards the bucket. Don't expect to begin drinking water immediately. Be patient, and you'll be rewarded. The least you should have in 24 hours is a pint. Chances are good there'll be a quart or more. Dr. Jackson points out, however, that a single survival still may not provide enough water to keep one man alive indefinitely. But two stills should be enough. The water collected is distilled and may taste flat, but the distillation makes it safe to drink.

In case of rain, the survival still acts as a catch basin and holds the water. Dr. Jackson reports another possible bonus: food, the water bucket under the plastic attracts snakes and small animals, which crawl down the top surface of the plastic and then can't climb back out. So for anybody hungry enough not to be squeamish, the solar still may also provide a meal.


Dirt to anchor
plastic sheet
Drinking
Tube
Approx. 3 ft.
Plastic
Sheet
Rock
Bucket

PART 12

FIRES

FIRES

INTRODUCTION

1. The importance of fire in Survival cannot be over-emphasised. You need fire for warmth, dry clothing and cooking.

TINDER, KINDLING AND FUEL

2. a. Tinder is the sort of material that will ignite with a minimum of heat, i.e. spark etc. Some examples are:

Cedar Bark
Birch Bark
Fine wood shavings
Dry straw
Sawdust
Charred cloth, and there are many more.

b. Kindling is larger fuel that will bring the burning point up to the necessary temperature for using larger fuel. Some examples are:

Small twigs
Split wood
Heavy cardboard.

c. Fuel is the final stage and could be any large form of combustable material.

FIRE LIGHTING EQUIPMENT

3. There are many ways to light a fire, however, by far the most reliable is to use the naked flame.

a. Matches should be conserved and kept dry at all times. They can be kept dry by wrapping them in polythene, keeping them in a watertight container (such as a 35mm Kodak, or Ilford tin) or by covering them with a protective layer of candle wax.

b. Burning Glass - The use of a magnifying glass, binocular lens, watch glass, or an ordinary bottle can direct the heat from the sun to the tinder and set it alight. This method depends on there being sufficient sunlight.

c. Bow and drill method - This is more time consuming but is effective.

d. Flint and Steel or Two Flintstones - If either of these two are rubbed vigorously together they can set a spark to tinder.

FIRE LIGHTING TECHNIQUES

4. a. By one of the above methods set alight a small quantity of tinder.

b. Transfer this tinder, or build on top of it a pyramid of kindling. Increasing the size of the kindling as it catches fire.

c. Finally add larger fuel as necessary.

d. Build a reflector to reflect heat where you want it and also protect the fire from the wind. This reflector can be of green logs, large stones etc.

N.B. DON'T smother fire by crushing kindling down with heavier fuel too early.

TYPES OF FIRES

5. a. Log or Stone Platform Fire

If the fire must be built on snow, ice, or wet ground, build a solid platform of logs or stones and light the fire on top of this:

Diagram 1 - LOG PLATFORM

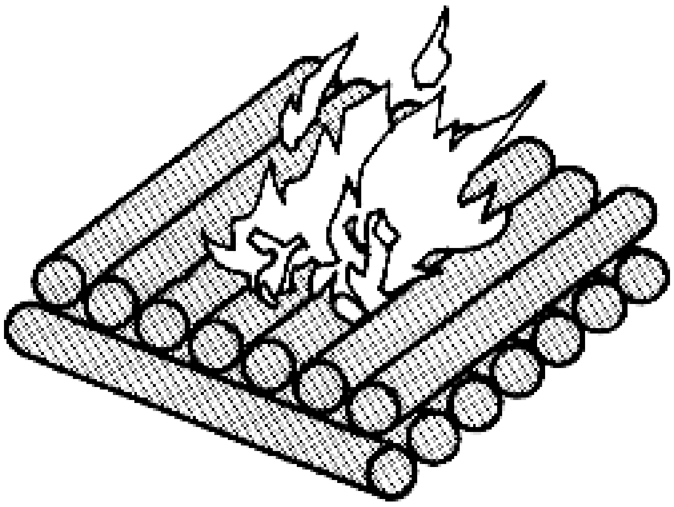
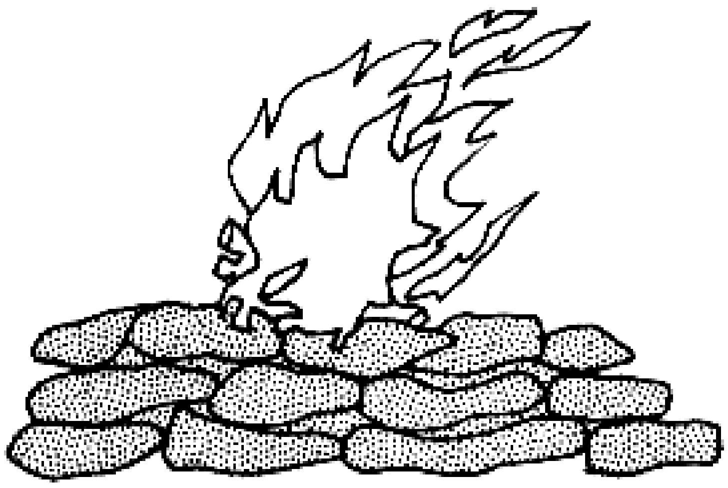


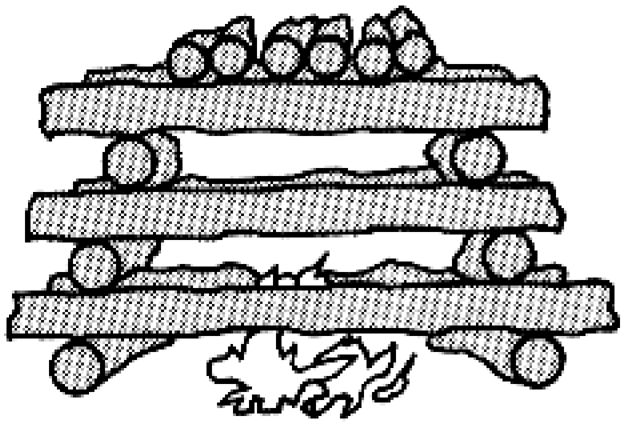
Diagram 2 - STONE PLATFORM



b. Pyramid Fire

This type is used for drying out wood:

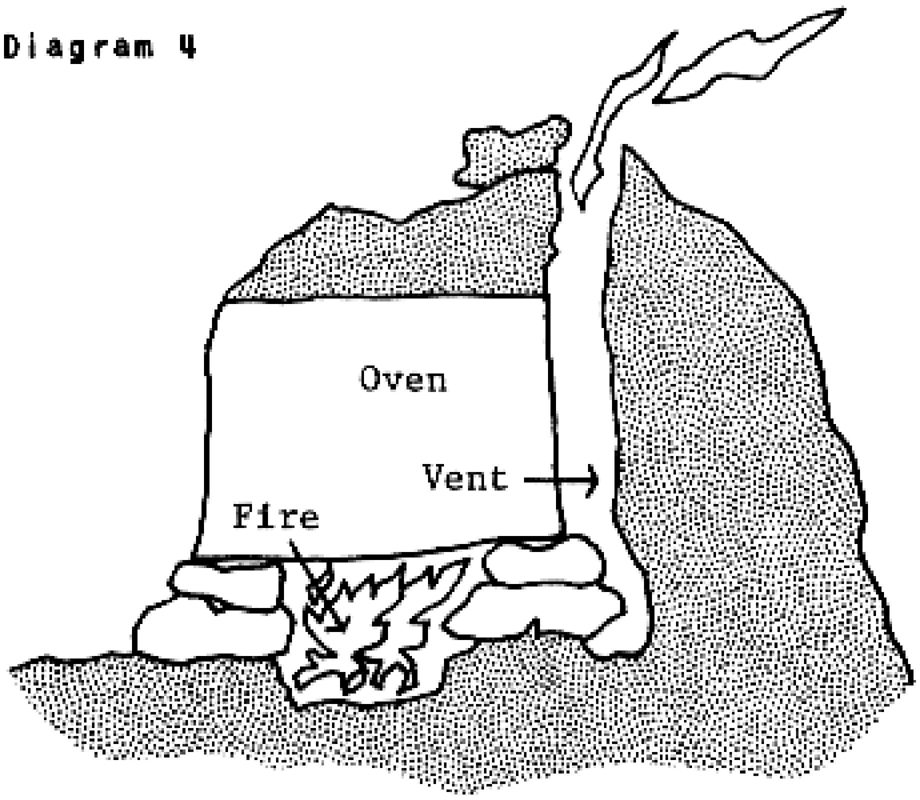
Diagram 3



c. Improvised Oven

To be made from old tins or flat slabs of rock etc:

Diagram 4



USEFUL HINTS

6. a. Fire must not be used in a careless manner. In a hostile area a fire or smoke from it may give your position away. A fire at night can be seen from a great distance and one in a parachute shelter shines like a beacon.

b. Use dry wood as a smokeless fuel whenever possible; unless a food smoking fire (para 5d) is required.

c. Don't waste matches by trying to light a poorly prepared fire. Use embers for lighting cigarettes or candles, not valuable matches. Use a shaved stick as a taper where possible.

d. Carry some dry tinder with you in a waterproof container.

e. Collect kindling, tinder and other useful materials on your route; you may need them later.

f. To keep a fire in overnight, if it is not required, cover the deeply glowing embers with ashes and dry earth. The embers will still be smouldering in the morning.

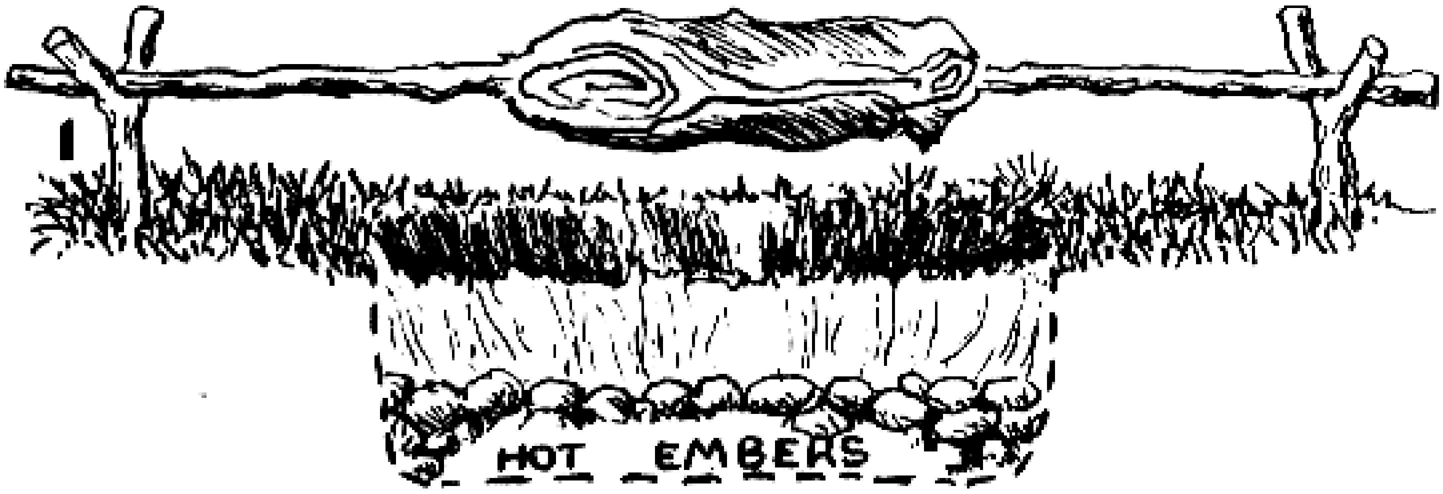
g. Remember that several small fires in a line beside you, or in a circle around you, give more heat than one big one.

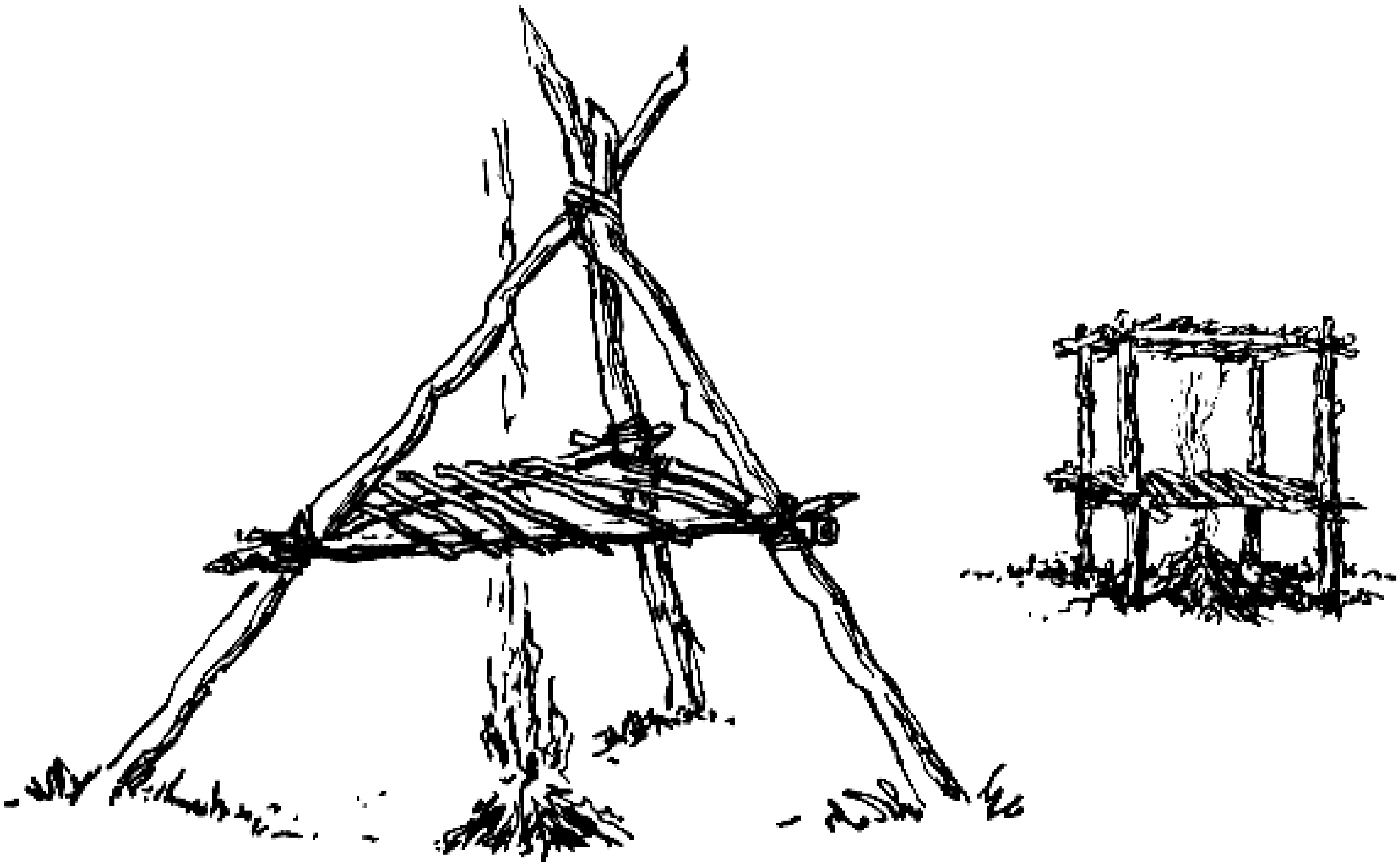
h. Build up a good supply of tinder and kindling fuel before you try and light a fire. It is disheartening to have spent ten or fifteen minutes lighting the tinder only to find out that within minutes you have run out of fuel. A good supply of tinder must be available as a considerable amount of time is required by you to personally nurse the fire in the early stages.

j. *When you are wet, cold and miserable, one hour spent building a shelter and a fire is worth many hours sleep.*

Trench Fire

cooking, roasting & baking





Smoke Tepee & Smoke House

curing of fish & meat

PART 13

SHELTER

SHELTERS

"Thou shalt protect thy health and strength in order that a ripe old age shalt be yours"

FIFTH Commandment for Survivors in NZ Bush.

INTRODUCTION

Initially an escaper will probably have to slide himself backwards into a hedge and lie up in some such cover by day. But if he has a long journey to do to get back to friendly territory the time will come when he is able without abandoning caution to make himself some form of shelter. It should be remembered that sleep and adequate rest are essential requirements when under survival conditions especially when the food intake is low. Therefore, the more care that is put into preparing a shelter the greater will be its value.

With the exception of snow shelters there is no set type of shelter for specific areas of the world. The materials from which they are constructed will vary depending upon geographical location. Whereas in jungle it is quite easy to build an entire shelter using natural resources, it is a very different matter when you are on a bare mountainside.

There is however a definite art in shelter building and this precis summarises the different styles of shelters. Speed of building with economy of effort can only come through practice.

The need for a shelter at all is dictated by climatic conditions. A shelter will keep out cold, keep off rain, or keep off sun, all of which may weaken the body and of course in extremes prove fatal. Anything which detracts from the efficient working of the body will obviously lessen the chances of survival.

MATERIALS

Natural resources will vary and can be used according to availability, but the following items of equipment will save time and trouble:

Poncho/Groundsheet/Plastic - to make a roof.
String/Cord
Knife, or some cutting instrument.

CONCEALMENTS

From the point of view of the evader, not only should shelters in exposed places be camouflaged, but all signs should be obliterated before leaving. Care must be taken in collecting materials for a shelter, so that fresh cuts can be hidden, and before moving on the shelter must be dismantled and concealed, together with any refuse.

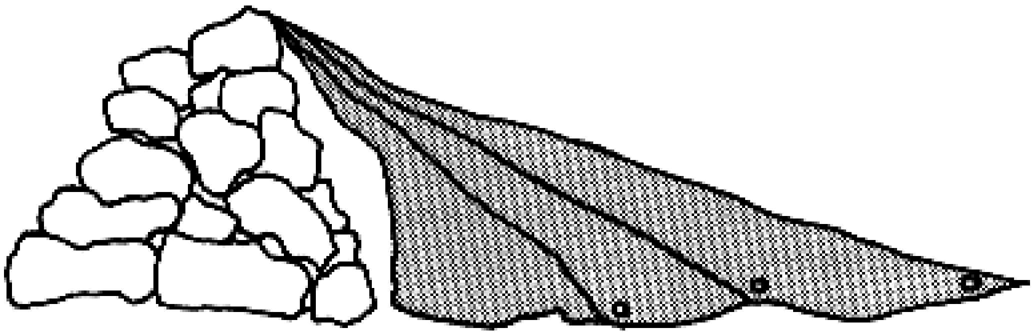
TYPES OF SHELTERS

Rocks

To protect against sun, wind, and low night temperatures in mountainous areas, including desert, above the tree line.

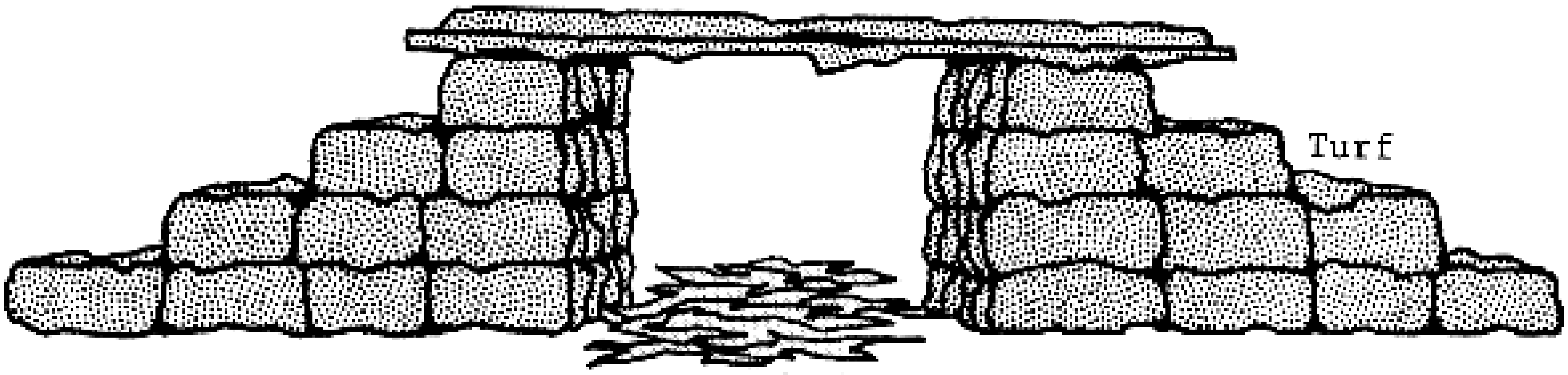
Sangar

Poncho roof to give shade during day, poncho to be used as blanket at night if not raining.



Turf

Only used in areas devoid of any other form of shelter. Steppes, plains, low grass-covered mountains such as Brecon Beacons. In its simplest form - a single wall windbreak:

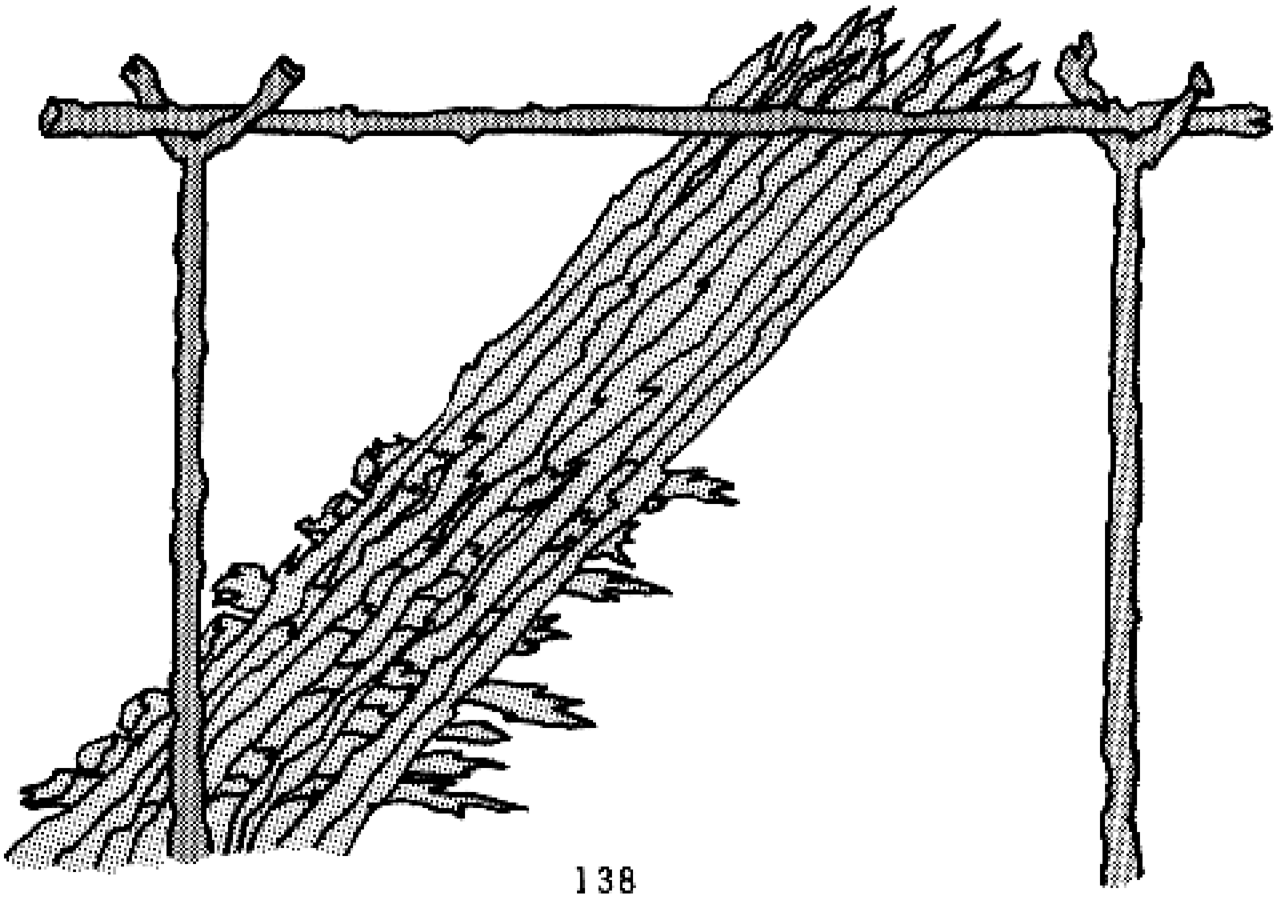


Trees and Bushes

These shelters in varying styles can be built in both Temperate woods and Tropical jungles. In jungle it may be necessary to build a platform to keep off the ground:

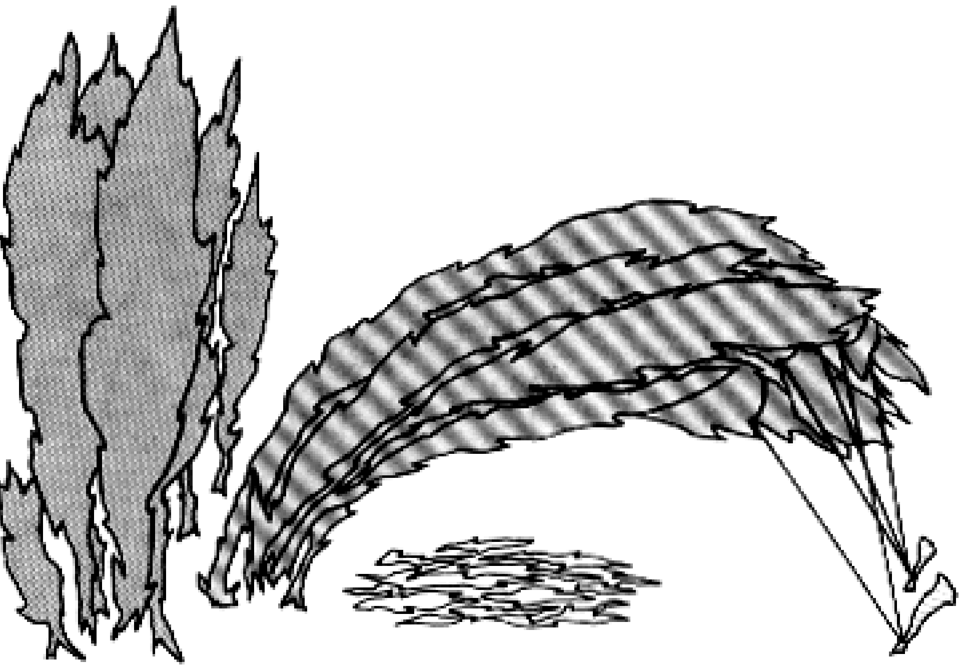
a. <u>Lean-to</u>

This is the simplest shelter and can be refined by the addition of walls, heat reflector, and floor, if time allows:



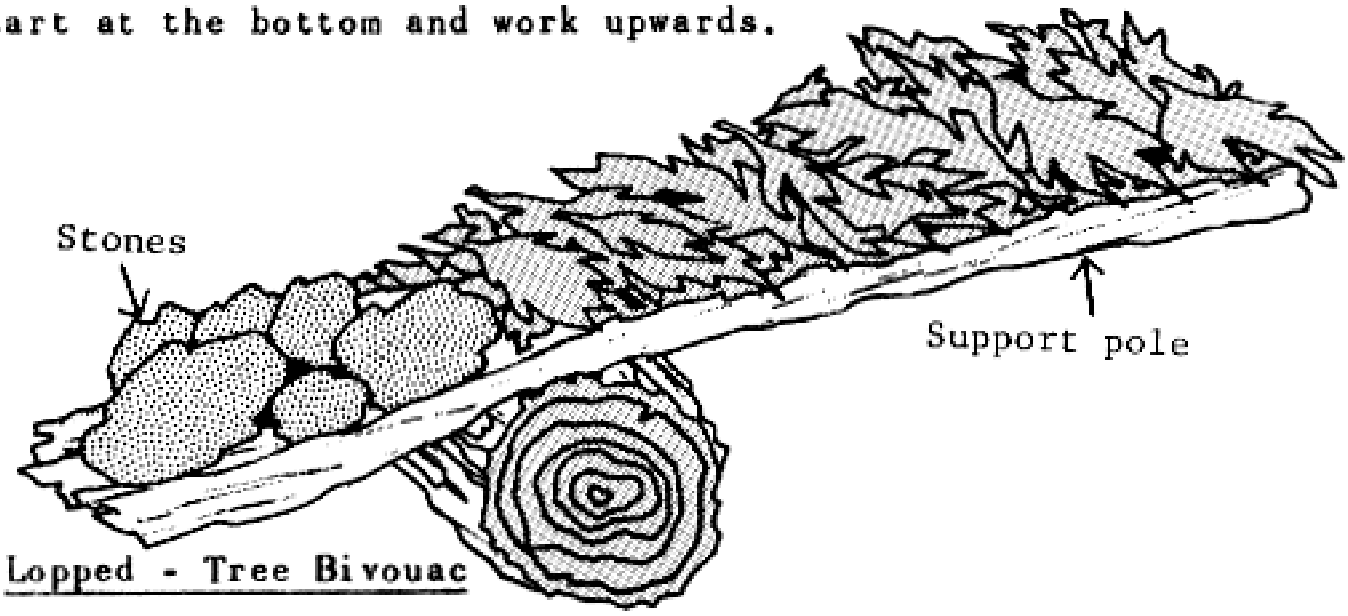
b. <u>Leaf-Basha</u>

Leafy boughs are bent over and tied to stakes. This frame is thickened up with other cut branches.



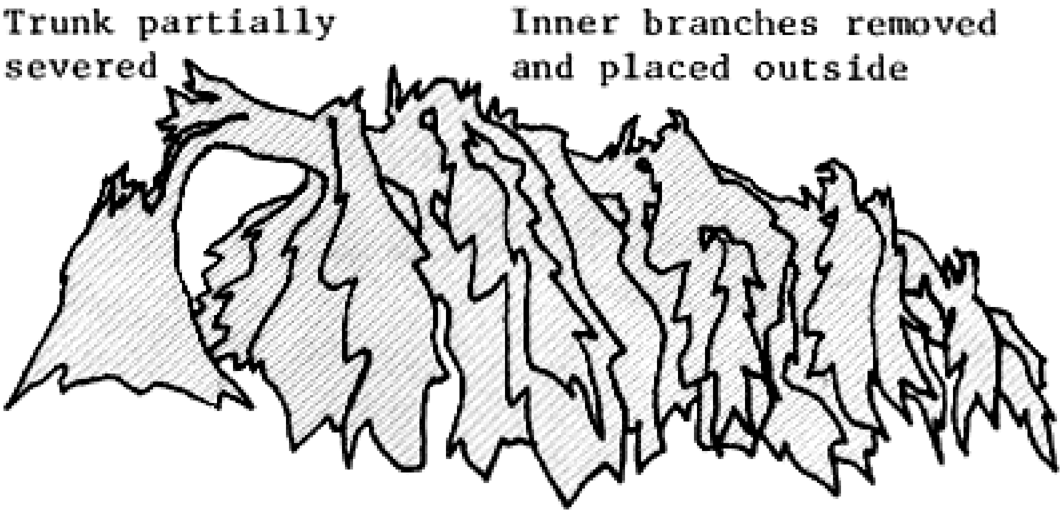
c. <u>Log Shelter</u>

Lay poles over a log to form a lean-to. Then thatch with leafy plant material as thickly as possible, or use ferns, or bark. Remember to start at the bottom and work upwards.



d. <u>Lopped - Tree Bivouac</u>

A small weatherproof shelter may be quickly made from a small leafy tree. Partially cut tyrough the trunk about five feet from the ground and push the tree over so that its top is on the ground and the stem is still fastened to the butt. Cut away the boughs on the inside to use as thatching and break any upstanding branches on the outside so that they hang down. Thatch the shelter with the boughs cut from the inside and also with material gathered from other trees.

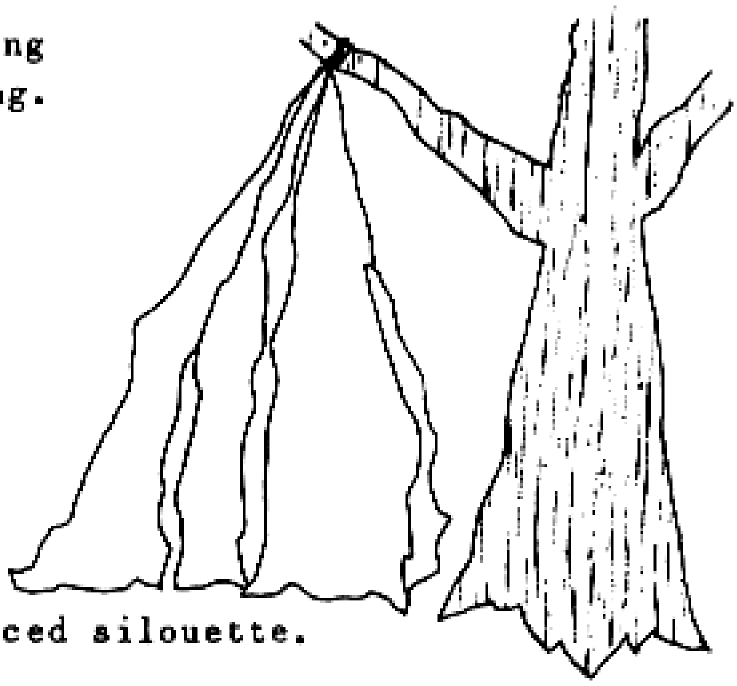


e. Parachute

If available, is light to carry and take up little space. Although not proof against rain, is windproof and relatively showerproof if not touched when erected.

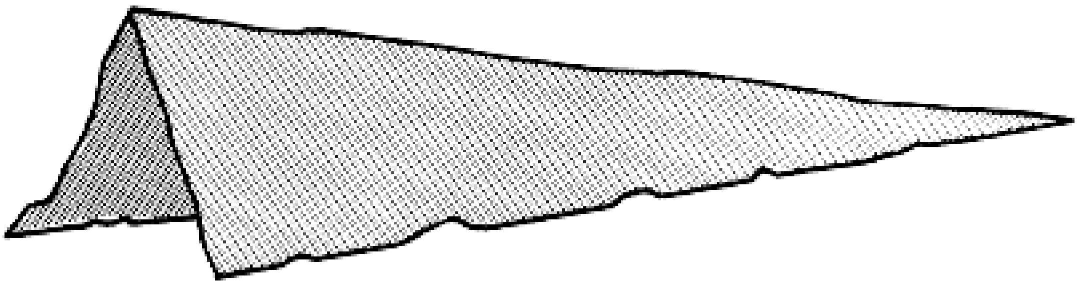
f. Parachute Tepee

Suspend apex from overhanging branch or tie over a sapling.



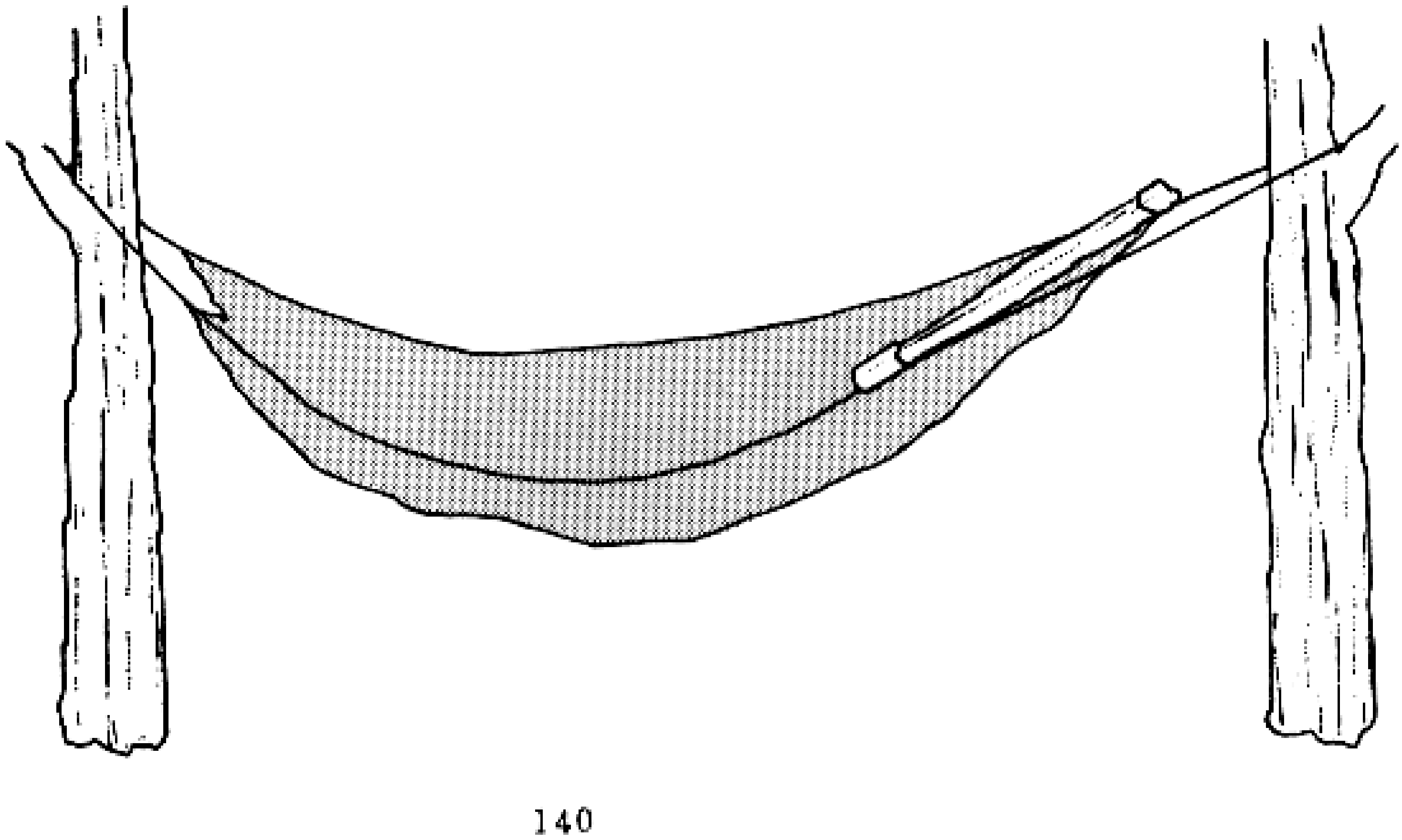
g. Horizontal Tepee

Has the advantage of a reduced silouette.



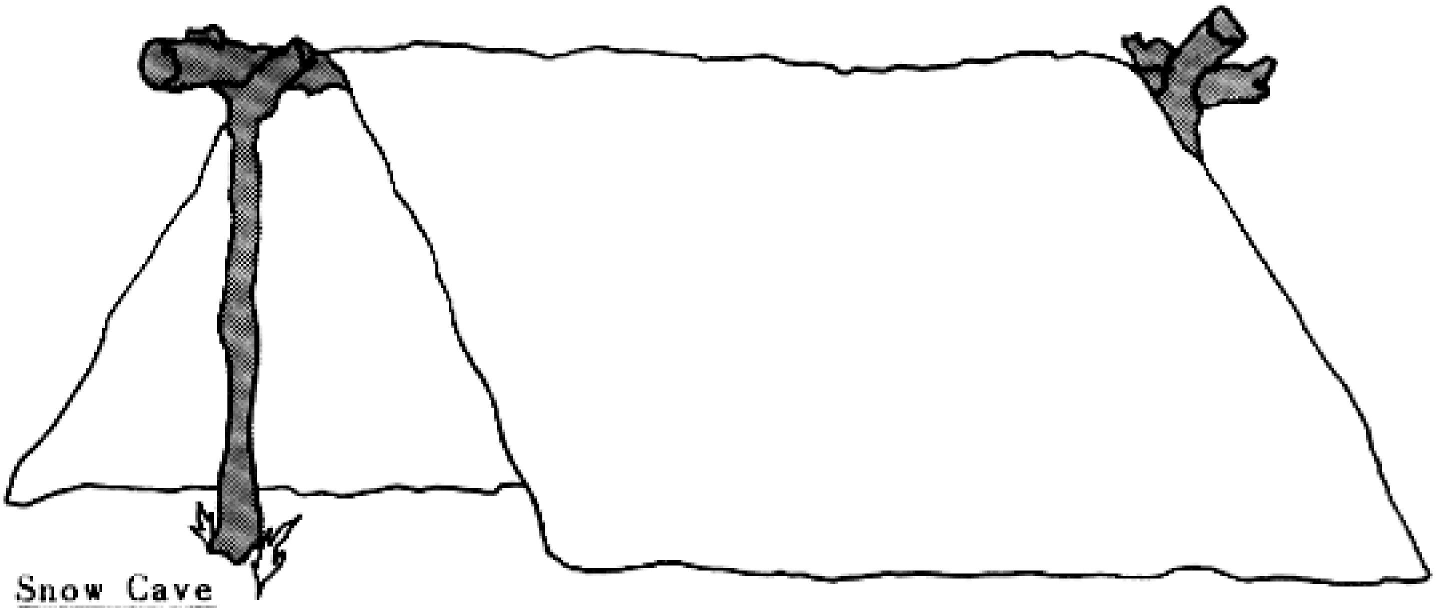
h. Hammock

Although not a shelter, is invaluable in jungle to keep off wet ground. Not difficult to make if sufficient cord is available. Cold to sleep in except in tropics.



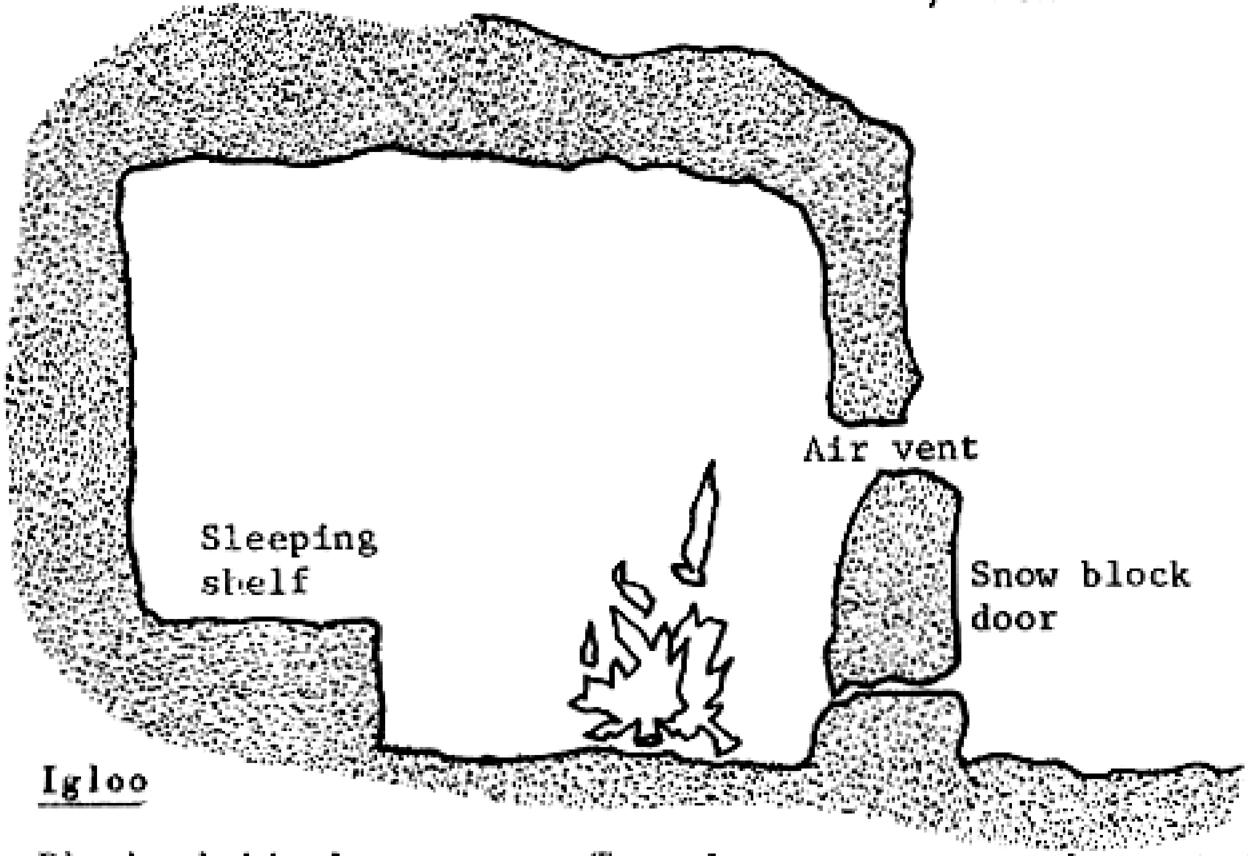
j. Poncho

Can be used on their own to make shelters, or in conjunction with other materials.



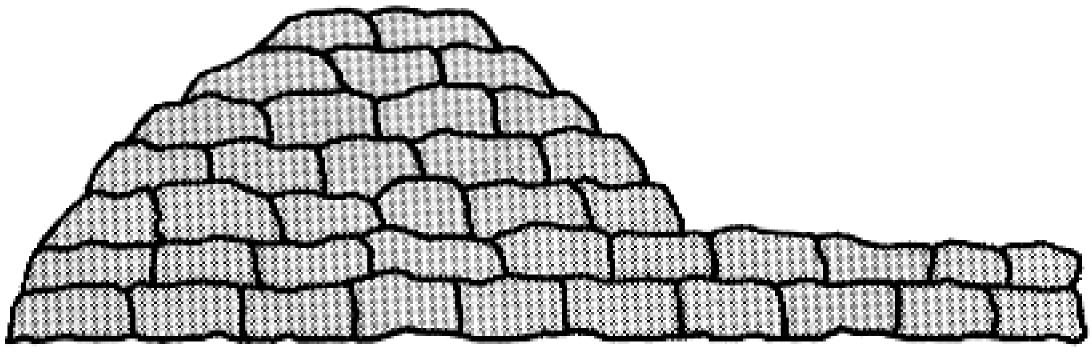
k. Snow Cave

Built into a drift or cornice. Door away from wind.



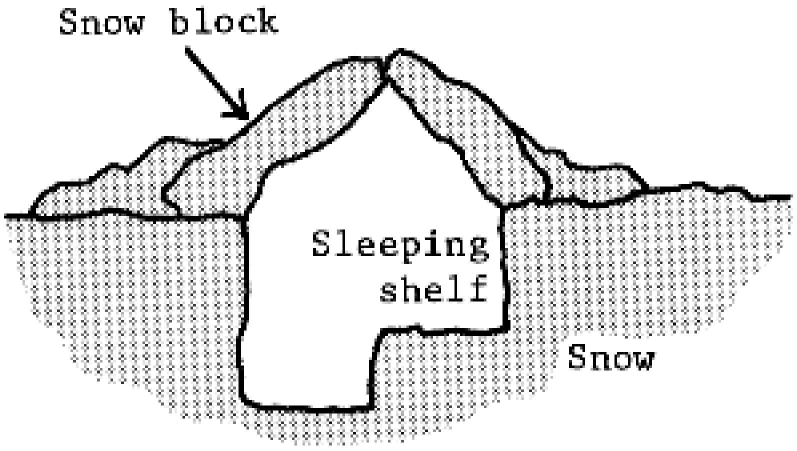
l. Igloo

Blocks laid slantways. Tunnel entrance away from wind. Needs very cold compacted snow. Difficult to make without a snow shovel of some sort.



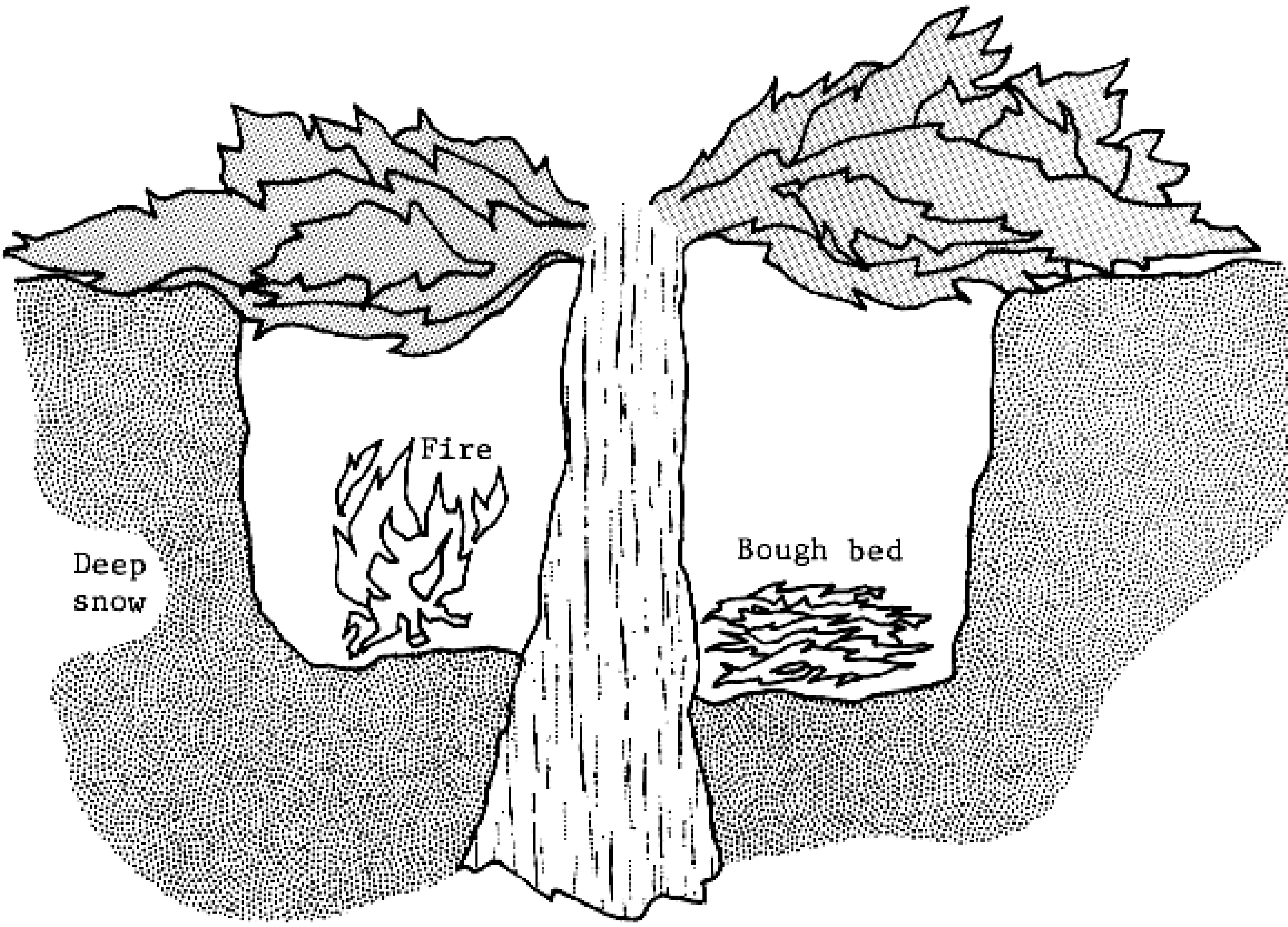
m. Snow Trench

For one man. Easy to build. If snow is soft roof will have to be made from branches and poncho.



TREE PIT

The natural depression in the snow at the base of the tree is deepened. Overhanging boughs can be thickened by interlacing with other branches.



PART 14

PRIMITIVE MEDICINE

PRIMITIVE MEDICINE

PART I

A. OBJECTIVE: To provide the shortest possible course on Primitive medicine in a Survival Situation.

PART II

A. INTRODUCTION: This article is based upon Dr. Lam's personal experience and first hand observations in Korea. Major Gene M. Lam, United States Army doctor, is very often quoted in USAF Survival Training School lectures.

You may not remember the greater portion of this article half an hour after you read it, but, if you are on the ground behind enemy lines or even in a desolate area of friendly territory, some of this will come back to you. If it helps save the life of even one man, then this article will have been well worth the effort on our part to reproduce it for dissemination to the aircrews assigned to this wing.

PRIMITIVE MEDICINE
By Dr. Gene N. Lam

"You must learn basic first aid - what to do for fractures, cuts, burns etc. If you go down, you are supposed to have all kinds of things with you - a survival kit, a first aid kit, and printed instructions about using them. Let's assume, however, that you land with only the clothes on your back - it happened just that way to lots of men in Korea. You then must know how to get along with what you have; to make do.

God gave you two important things - your head and your hands. If you think and intelligently use what you have, you can take care of yourself.

That's why I believe everyone should be taught to survive under the worst possible circumstances. Then if he is in a less strenuous situation he can get along well; if he has aids for survival, they're so much gravy.

B. SURVIVAL FIRST AID: When you learn first aid and study survival medicine, you must assume that there will be no one but you to practice it. In survival and evasion there probably will not be anyone else except perhaps men from your own crew. All six doctors captured with me were put in one PW camp, but few USAF doctors are apt to be captured and you may be in a camp of only Air Force prisoners. You may not have a trained medical corpsman - you should not expect to have one.

When most of these observations were made, there were five doctors in the camp with me. Thanks to all of them - including the three who later died - I can tell you these things, not as my own isolated findings, but as our group opinions.

Immunization helps, don't avoid shots. You can save your life by keeping your immunization record up-to-date. No man died in Korea of any disease for which the armed services give immunisation shots.

C. NOT ADVANCED SCIENCE - BASIC PRINCIPLES: All of us - patients and doctors alike - depend to-day upon the wonder drugs, fine laboratories, modern medical equipment. We have too easily lost sight of the 'country doctor' type of medicine, of the things men always have that can save them - determination, common sense, and a few primitive techniques. Some of these remedies were practiced by the Greeks, Romans and Arabs long before the birth of

Christ. They are still good to-day when no other means are available. It's amazing, but man can and does live without penicillin for every ache or pain.

D. REGARDLESS OF WHAT IT IS - EAT IT: One basic principle of survival medicine is to eat. After you have been down a few hours, you get hungry. If you can, find something edible and eat it. If you are captured, someone soon will bring in a bucket of slop and, after your stomach has flipped from the sight and smell of it, you say, "I can't (or won't) eat that stuff."

You'd better eat it because that's all you'll get and it may get progressively fouler and skimpier. Here 'will' comes in. Say to yourself, "I'll eat everything they give me and the nourishment will help me to get through." You must eat everything you can get - issued rations, things you can steal, things you procure from the environment.

We ate dogs, cats, rats, weeds, maggots. For a while we got only ground field corn, boiled for half hour. It is tasteless but it will keep you alive. In fact, we were living it up when we got that corn mash.

Most PWs in Korea ate dog but it was hard to do. Dogs are a delicacy in that area and we weren't issued luxury items, but once in a while a stray could be shanghaid. The town we were in had a stray cat. Pussy didn't wander long. It was quite delicious, rather like squirrel.

It helps not to be able to identify a strange dish the first time its served but after the first time, the ingredients don't really bother.

It was difficult to down rats but they were edible. I strongly recommend cooking them because raw they can carry several diseases.

Snakes, of course, are eaten the world over and some varieties are delicious. Just chop of the head, skin the rest, cook, then eat what's left. Even poisonous varieties are edible.

Maggots are something else. Once we were issued rotten fish loaded with maggots. Our English cook protested and wanted to scrape them off. Afraid that some of the fish would be lost, I insisted that he cook fish, maggots and all. We ate the results, which were really quite good.

In May 1951, every PW in camp was swollen like a balloon from severe beriberi. Since spring weeds were beginning to appear, we figured we could boil them as a cure but there wasn't a weed in camp. However, some of us were taken almost daily to a river for wood and other supplies. The criterion for success soon became not how much wood but how many weeds we could bring back. We didn't know what kinds of weeds they were, but we picked them, boiled them and ate them. Our beriberi disappeared.

You will be revolted by food given you as a PW, but if you miss one meal as a prisoner it will take you weeks to regain your lost strength. You can't afford to miss a single bite when you are on a bare subsistence diet. If you're going to live, eat. If you plan to escape, you must have the strength to do it.

E. YOUR RETURN TICKET - YOUR OWN FEET: Your two feet are the other half of the round-trip ticket. The importance of caring for your feet cannot be over-emphasised. Men walked barefoot for miles over snow and ice when the Korean weather was 45 to 50 degrees below zero. Those who took proper precautions got neither trench foot or frozen feet.

The precautions are simple. If you have shoes and socks, periodically take them off and rub your feet for five to ten minutes. You won't get frostbite.

If you have two pairs of socks, put one pair next to your skin to keep it dry. Change to the dry pair at least once a day. When you bed down at night, take your shoes off. Any man who gets frostbite is guilty of neglect amounting to misconduct.

In order to land safely after bailout, to walk and protect your feet, you must have proper boots. Those men who landed in North Korea with lowcuts will back me up on this.

Incidentally, if you remove the steal arch support that is in most boots, and sharpen it on a rock, you will have an excellent surgical knife.

F. DYSENTERY: Dysentery becomes a problem in enemy territory to most men - be they evaders or prisoners of war. The risk of dysentery can be greatly lessoned if you have and properly use halazone tablets or iodene, or if you boil water. But there will be times when you cannot possibly take such precautions. Also, men have gotten dysentery from nothing more than just being scared.

What is dysentery? In our camp we set up an arbitrary standard: 25 stools per day. Eight to ten was normal and 15 was merely simple diarrhea.

What can you do about dysentery? You will lose water which you must replace. If possible, replace it with boiled water, but at any cost drink quantities of liquids. You also must eat, even if that means choking down food.

Charcoal can help. Take any partially burned piece of wood, scrape off the charred portions and swallow them. How much? Oh, about a handful.

Bones - any kind of bones - can help. They are best if burned and ground into ash, but you can grind bones between rocks to a powder, just swallow the powder.

The Communists, anxious to 'educate' every prisoner of war, usually have lots of chalk around for writing on the 'wonders' of Bolshevism. Steal some ordinary school room chalk, powder it and swallow it. It, too, will help cure dysentery.

Pull bark from trees, preferably oak trees, but any kind will do. Boil it from twelve hours to three days. As the water evaporates, add more. The resulting brew will be so black, so vile tasting and so evil smelling, that it will choke you. But boiled bark contains tannic acid and that will help to cure your dysentery. It also can help further the healing of burns. Boiled bark is so terrible to choke down that we were never really sure whether people willed their dysentery to quit rather than swallow the medicine. We joked that the cure was worse than the disease - but it was a cure. (I remembered this remedy because my grandfather had used tree bark to cure deer hides and I figured that something with enough tannic acid to cure hides probably contained enough to cure dysentery.)

Tea is another dysentery cure because it, too, contains tannin. Men who'd had chronic dysentery for two or three years were cured when we got enough tea. Strong tea solutions which contain tannic acid in concentration, have also been used for centuries for burns.

G. HEPATITIS: In the summer of 1951, when the Communists talked mildly about bacteriological warfare, we laughed it off as impossible. We still joked about it when they innoculated us against this ridiculous 'threat'. There was a bottle of Soviet-made serum, one syringe and one dull needle for 110 PWs. The first man in line had hepatitis. Within a week 35 others had it.

Hepatitis, or yellow jaundice, is a liver disease. When you have it, you don't want to eat *but you must*. We force-fed men to keep them alive - pushing rice or anything else available down their protesting throats. We also tried to keep them off duty as much as possible for about six weeks after the jaundice had subsided.

The loss of appetite from this disease is terrible. I know because I had hepatitis twice. The other doctors kept me alive by force-feeding me. At the time it was rugged and I hated them for it - but to-day, needless to say, I am grateful.

H. LICE: As a prisoner of war you will get to know many representatives of the animal kingdom, among them, the louse. This six-legged insect can kill you. There are some 5o,000 cc's of blood in the body of a normal man of average size. A single louse sucks one cc of blood a day. A louse covered man soon dies.

In Korea no PW died of any louse-borne disease. I credit this to immunization. *Do* keep your shots up-to-date. However, lice can bleed you to death unless you pick them off *every single day*. Never fail to do this even though you are cold, tired and sick, whether you are a PW or an evader.

One PW complained of being weak and tired. In our makeshift hospital, next to the equally makeshift morgue, I unbuttoned his jacket and shirt and pulled up his undershirt. He was a mass of moving grey bodies. Lice were so thick that I could not see his skin. That man was literally being bled to death.

You must pick lice off frequently, for they breed faster than rabbits. Regardless of how cold it is, you must inspect your entire body and every seam of every garment at least once a day, picking off every single louse. Louse hunting does more than just keep the bug from killing you. It not only provides diversion and entertainment of a sort, it also keeps you busy. Purposeful occupation is important beyond measure if you are an evader or a PW.

J. WORMS: You will get worms - all kinds, round, hook and tape worms. They will come from the food you eat and the dirt and filth where you live. Some will look exactly like angle worms five times enlarged. Although there are other symptoms, positive proof that you are infested is when a worm crawls out of your nose. That undoubtedly will shake you up a bit. It always does.

Personal hygiene is the best preventive measure against parasitic infestations. You may not be really clean from the day you do down until you get out, but there are things you must try to do. Wash your body and clothes as often and as well as you can. And above all, pick lice off at least daily.

Depending upon supplies, there is a worm remedy: Swallow a couple of tablespoons of kerosene or gasoline. Kerosene is more effective but gasoline will do. Either will make you a bit sick, but will make the worms a lot sicker.

K. PNEUMONIA: You will encounter diseases and your resistance to them will be low. Pneumonia is probably the most common, especially in winter and it makes you extremely sick. You will have no penicillin, no terramycin, not even old fashioned sulfa. (In Korea I had 250 sulfanilamide tablets for more than 2,000 men.)

When a man has pneumonia in primitive circumstances, there is only one thing you can do for him, even though it is not in any medical book - keep him on his feet. You should not keep a sick man on his feet 24 hours a day, but don't let him lie in a corner, pull something over his head, and roll over to

face the wall. If he does this, he will die. You must keep him alert and interested, or he will not live.

Some men with severe cases of pneumonia lived because of this treatment and their own will. Others with bad colds got frightened, laid down, gave up, and died within 24 hours.

L. BLEEDING: Here I want to make a plea; If you are bleeding, DO NOT put on a tourniquet. I believe more men lost arms and legs as a result of tourniquets than from any one type of war wound. A tourniquet destroys tissue, gangrene sets in, and it is often impossible to save the injured member.

Just apply heavy, constant pressure - that alone will stop 99% of all bleeding. If blood is spurting out, stick your finger down on the wound and hold it there.

M. BURNS: Suppose you are burned. The book says to wash out the burned area and to cover it with a sterile dressing. What, you ask, can you wash it with when there is no water or none that can pass in the dark as sterile? Well, every man has his own supply of one of the most sterile liquids you can find - his own urine. This is just one of the small bits of knowledge you may be able to put to good use. Trying it under extreme circumstances will not hurt you and may save your life. As you read earlier, tannic acid is good for burns, as well as dysentery. There is tannic acid in strong boiled bark and tea solutions.

N. THE WATER CURE: Hot water probably saved the lives of more prisoners of war in Korea than any other measure or remedy. We used hot water to treat men with everything from headaches to athlete's foot.

For a while men came in and gave us long lists of symptoms, before asking "What do you suggest?" Our prescription was usually "Go soak it in hot water." After a while they began to say, "Doc, I've got thus and so. Now I know you're going to tell me to go soak it in hot water, but I just want you to know about it anyway."

Maybe hot water didn't help in every case, but soaking kept the patient busy doing something that seemed reasonable and purposeful. A man who sits for two or three hours soaking a toe or hand, usually doesn't dwell on his unfortunate situation. He's too busy thinking about the cure he's effecting, or how much better his toe or hand feels. (For stomach aches, we might use a variation: Heat a brick and put it on your tummy.)

O. WOUNDS AND SURGERY: There are three treatments for a wound under extreme conditions: Clean it out if possible with hot water; wash it out with urine, and/or pick out all foreign matter. The book says never to stick your fingers in a wound. If you have nothing else and if there are pieces of metal or bits of clothing in the wound, pick or dig them out with your finger.

Maggots were an accepted treatment for infected wounds during World War I. Maggots eat only dead tissue and will clean out a wound better than anything else except surgery. How, you ask, do I get hold of maggots? That's easy if you are anywhere in Asia - just expose the wound. The maggots will find it.

If surgery of any kind is required, remember that the area of a wound is dead. When you realise there is no feeling in a wound, it is easier for you to stick a needle into it, to cut, or to do whatever else is necessary.

(We had to amputate a few toes as a result of frostbite. For the first six months, we had a little ether, but later there was no anesthetic.)

You may never have to use a knife to lance boils, cysts and the like; but, if you do soak the area in hot water for a couple of days and then if it is still necessary, open it up.

A most successful hemorrhoidectomy was performed in our camp. A major had a terrible hemmorhoid that bothered him dreadfully. He limped around for days, soaking in hot water as often as possible. When the condition failed to improve, he came to me. As he bent over for me to examine him, four trusty colleagues grabbed him. I whipped out my trusty surgical knife, patiently sharpened to a razor's edge on stones but originally a steel arch support from a boot. Out came the offending hemmorrhoid despite the patient's belligerent screams and profane threats. The operation was extremely successful. The patient not only lived - he lived in considerably greater comfort.

P. <u>MEDICAL SUMMARY</u>: You, of course, know all the basic first aid the Air Force has exposed you to. And, of course if possible, you will have with you a standard first aid kit, as well as your own special one. (Having such kits is a real luxury.) In addition you must face the possibility or even probability that emergency treatment may extend far beyond those normally covered by peacetime ZI first aid. You must also face the very real probability that you may be the only person available to perform such treatments. Under such circumstances, you must use what God gave you: Your head and your hands.

Men with chest wounds - open, sucking wounds - have stuffed them with handkerchiefs or torn shirts and kept going. Men have broken their backs when they bailed out or hit the ground. After regaining consciousness, they have rolled around for a stick or board, strapped it to them in a fashion and moved on. Men with severe wounds have amputated a limb, whittled a crutch, and kept going. Many things are possible to those with will and determination.

Q. <u>THEFT</u>: In a prisoner of war camp you learn not only to scrounge but also to steal proficiently. When I got back to the States, it took me a long time to learn to keep my hand in my pockets when I walked through dime stores.

Sometime you steal because an object is useful to you. More often you steal things you know you can't use. We figured that everything cost the Communists money or efforts, so that we made additional money or effort necessary when we stole any item. Also, thievery built up our morale.

One enlisted man in our camp was a professional thief who perfected his calling at the Communists expense. The Chinese camp commander eventually became so enraged that he called in our man. When the PW returned, we were curious about what had happened. He explained that he stood stiffly at attention while the commander chewed him at length (and in Chinese) about his thefts. "He was so hot about it, that he impressed me. In fact, I think I ought to take back his watch and pen that I just lifted."

In the camp known as "Death Valley", we stole a complete building. The Communists had let us build a little hospital, had given us two 55 gallon drums for a stove, but wouldn't give us any wood for it. Nearby there was a wooden building, with mud plaster on the outside. Over a period of two weeks, we surreptitiously took board after board from that building until only the thin plaster shell remained. One night we finally knocked that down, removing the last boards and every piece of straw. The Chinese didn't realise the building was gone for two weeks, and by then we had burned the evidence in the hospital stove.

I was called in for questioning as to what had happened to the people's building. I could only reply that there was no such building. When they looked at the place where the building had been, there was only a bare spot. How could they accuse us of stealing a building? It was too ridiculous!

You may occasionally get caught in such thefts, but usually it's worth it. Through such activities you can pay the enemy back for his harassment. Sometimes your thefts may even cause your captors to cease harassing activities. In any event, you have a lot of fun outwitting them.

R. <u>KEEP A SENSE OF HUMOUR</u>: Humour is important in a prisoner of war camp. Even though everything around you is tragic, you must laugh to sustain your will to survive. You have to consciously work to retain a sense of humour, a sense of the ridiculous. If the Communists tie you up for some reason, you must be able to find humour in the fact that you can tie better knots than two or three of them are doing.

I actually laughed at men dying. There were symptoms you could assess without being able to describe them: a listlessness, a look, turning from reality. When there symptoms appeared in various degrees and varying combinations, you could estimate very closely how long a particular man you had come to know well would cling to life. Another doctor and I had a running bet on life expectancies. Even though I made money on the deal, I hope never to have to face such a situation again.

We used our sense of humour rather effectively in a perverted sort of counter-harrassment. Americans are the most unpredictable people in the world - and methodical types like the Chinese Communists were unstrung when they could not anticipate what we would do next. We encouraged this by deliberately moving along in one direction for a while and then without warning make a complete 180.

Such activities seemed to us our little contribution to the war effort, that we had a mission of some sort. Our PW camp was our 'front' a small but active area of combat. Although we had no orthodox weapons, we inflicted what we could to the enemy we encountered.

Some camps had one guard for every two or three prisoners. Primarily because they couldn't figure us out nor anticipate our actions, we had two guards for every PW. A small contribution to the total was effort? Perhaps, but it gave us a sense of accomplishment and it did tie up a number of Chinese.

It's hard to say which we enjoyed more, our pleasure in a prank for our own sake or the confusion we could create by it. For example, the commies had a 50-foot pole lying on the ground, ready to be raised as a flag. We stole the pole sawed it up and burned it. One PW got 30 days solitary for it but, after all somebody had to be punished and the antic was well worth it.

Right in the midst of the big germ warfare campaign, we caught a rat. The rat acquired a parachute and a USAF tag before being hung on a bush by the front gate. The chief commissar, dainty airy fairy type found it. He jumped four feet in the air, did three double flips and raced hysterically back to his headquarters. Then the officials came to investigate, and to take pictures for their files of 'proof' about bacteriological warfare! We roared with glee, to their complete confusion. That spoof had us laughing for weeks and such laughter kept us alive.

One PW calmly walked up to a guard, socked him in the nose, grabbed his gun, tossed it over the fence into a rice paddy, and just as calmly walked away. It was marvellous because the guard could do nothing without risking punishment himself.

In every group there are characters. Look for them and encourage them to dream up stunts to make the group laugh and to confuse your captors.

S. SUMMARY: Your chances of survival can be extremely good, even as a prisoner of war, if you do these things:

1. Exercise your leadership responsibilities.
2. Maintain military and self-discipline.
3. Keep up your own and others' morale.
4. Recognise and control fear.
5. Keep on your feet, keep going.
6. Eat everything you can get hold of.
7. Nourish your sense of humour.
8. Keep your immunization up-to-date.
9. Practise survival self-aid and preventive medicine, using common sense and your surroundings.
10. Keep up your will to survive.

Training, such as is given at the USAF Survival Training School, helps tremendously. It especially helps you over the first shock of being an evader or a prisoner. You should learn what the possibilities are and face them. You must master the basic fundamentals of hygiene, survival sanitation, first aid, preventive medicine and survival nutrition, including securing natural foods and the nutritive values of native foods. Training greatly increases your chances of survival.

However, of all the things I've discussed, none is as important as your own will to survive. Regardless of where you are, how miserable your circumstances, what the enemy does to you, MAKE UP YOUR MIND THAT YOU WILL LIVE THROUGH IT. Men had this one idea and they kept it despite everything: "I'm going to live!"